GPS AutoSteer System
Installation Manual

Supported Vehicles

New Holland Combines

CR 9040	CX 9040
CR 9050	CX 9050
CR 9060	CX 9060
CR 9070	CX 9070
CR 9080	CX 9080

IntelliSteer Ready

PN: 602-0231-01-A

LEGAL DISCLAIMER

Note: Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

Note: Take careful note of the safety information in the Safety Information section and throughout this manual.

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

Please take special note of the following warnings:

1. There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.
2. During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle AutoSteer system turns the wheels automatically. Be sure that all people and obstacles are clear of the vehicle before engine startup, calibration, tuning or use of the AutoSteer system.
3. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Ensure that the system is OFF before driving on roads or in public areas.

Special Requirements

Tools

This list consists of the tools required to complete the installation. The installer is assumed to have a complete set of common installation tools.

13mm socket and ratchet	5/16" wrench	#1 Phillips screwdriver
13mm wrench	3/8" wrench	#2 Phillips screwdriver
14mm wrench	7/16" wrench	Hack saw
15mm wrench	1/2" wrench	1/8" drill bit
16 mm wrench	9/16 wrench	21/64" drill bit
24mm socket and ratchet	3/16" Allen wrench	25/64" drill bit
24mm wrench	1/8" Allen wrench	Drill
4mm Allen wrench	Knife	Side cutters
5mm Allen wrench	Wire crimpers	Tape measure 12 ft (3.6 m) minimum
3/8" socket and ratchet	Steel ruler	Hammer

Safety Information

Warning Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:

- As the operator of the vehicle, you are responsible for its safe operation.
- The AutoSteer system is *not* designed to replace the vehicle's operator.

Note: Verify all screws, bolts, nuts and cable connections are tight after the final installation of the AutoSteer system.

⚠ WARNING

To avoid electrical shock hazards, remove the Roof Module from the vehicle before driving under low structures or low electrical power lines.

⚠ WARNING

To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.

⚠ WARNING

To prevent accidental death or injury from being run over by the vehicle, never leave the vehicle's operator chair with the GPS system engaged.

⚠ WARNING

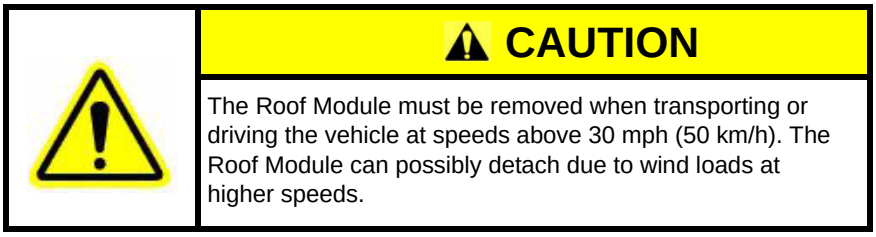
To understand the potential hazards associated with the operation of AutoSteer equipment read the provided documentation before installing the AutoSteer system on a vehicle.

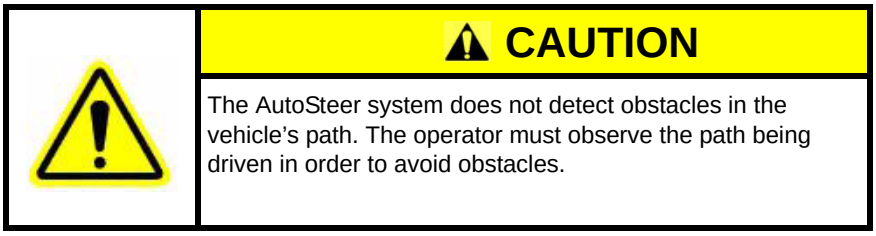
⚠ WARNING

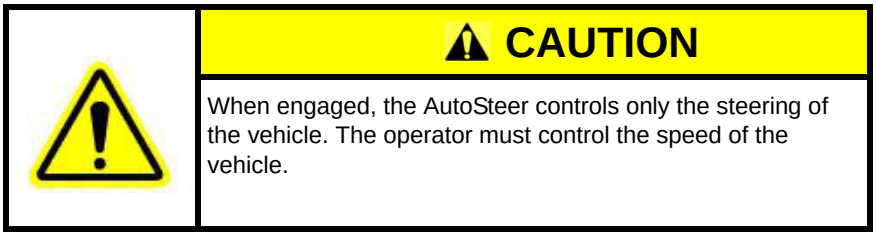
To prevent the accidental engagement of AutoSteer system and loss of vehicle control while driving on roads, shut down the AutoSteer system (exit the program). Never drive on roads or in public areas with the AutoSteer system turned on.

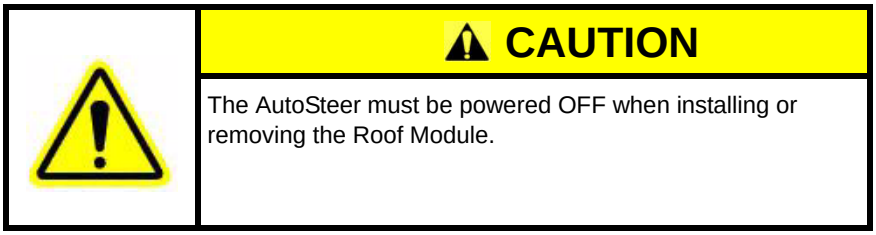
Caution Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:


CAUTION
The Roof Module must be removed when transporting or driving the vehicle at speeds above 30 mph (50 km/h). The Roof Module can possibly detach due to wind loads at higher speeds.


CAUTION
The AutoSteer system does not detect obstacles in the vehicle's path. The operator must observe the path being driven in order to avoid obstacles.


CAUTION
When engaged, the AutoSteer controls only the steering of the vehicle. The operator must control the speed of the vehicle.



⚠ CAUTION

The Roof Module must always be firmly secured to the Roof Rail using the provided hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.

⚠ CAUTION

To prevent eye injury, wear eye protection when drilling, tapping or using power tools on the vehicle or other hardware.

Vehicle Requirements

The vehicle must be IntelliSteer Ready from the factory. This means it has an Electro hydraulic valve for autosteer and a steering encoder for manual override.

The vehicle steering and hydraulic systems must be in good working order before installing the AutoSteer system. Check for loose or worn parts. Before installing the AutoSteer system drive the vehicle and confirm that it steers straight and the wheels can be turned from lock to lock. Check the steering system hydraulic hoses and connections to ensure there are no oil leaks.

The vehicle electrical system and battery must be in good working order.

The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle improves overall installation and cable routing.

Important Information

Note: Verify that all screws, bolts, nuts and cable connections are tight after the final installation of the AutoSteer system.

Technical Support

Refer to your owner's manual for technical support information.

Contact Information

Refer to your owner's manual for contact information.

Copyright © 2009 All Rights Reserved.

Table of Contents

Chapter 1 **Installation Overview** **1**
- Vehicle Inspection 1
- Installation Procedure Outline 2
- Kit Overview 3
  - Assemblies 3
- Cable Diagram 6

Chapter 2 **Wheel Angle Sensor (WAS) Installation** **7**
- Mounting Wheel Angle Sensor Hardware 7
- Cutting Linkage Rods to Length 10
- Assembling Linkage Rod Hardware 12
- Attaching and Adjusting Wheel Angle Sensor Linkage Rods 15

Chapter 3 **SA Module Installation** **25**
- Installation Procedure 25

Chapter 4 **Roof Module Installation** **29**
- Safety Notes 29
- Installation Procedure 30

Chapter 5 **Display Installation** **41**

Chapter 6 **Connecting System Cables** **45**
- SA Module Harness 45
  - SA Module Connection 46
  - AutoSteer Wheel Angle Sensor Connection 48
  - Steering Valve Connection 50
  - Steering Encoder Connection 52
- Main Cable Harness 56
  - Route Main Harness Into Cab 57
  - Connect to SA Module Harness 59
  - Roof Module 61
  - Display 65
- Power Supply Connection 65
  - 12V Cab Power Outlet 66
  - Battery Power Connection 67
- Install Warning Label 69

Chapter 7 **Post-Installation Procedures and Information** **71**
- Verify the Vehicle is Ready for AutoSteer 71
- Calibration and Tuning Notes 71
- Lowering Roof Module for Vehicle Transportation 71

Chapter 8 **Final Hardware Installation Checklist** **75**

Installation Overview

This **Installation Overview** chapter contains part numbers, kit overview diagram, cabling diagram and the installation procedure for the New Holland Combine AutoSteer Kit.

- *Vehicle Inspection*
- *Installation Procedure Outline*
- *Kit Overview*
  - *Assemblies*
    - *Bracket Kit Components*
    - *Common Kit Components*
- *Cable Diagram*

This installation guide describes the AutoSteer system installation on several models of combines shown on the front cover. The AutoSteer installation kit PN: 188-0040-01 is used on these vehicle series.

Note: If you are installing an electric steering wheel actuator such as OnTrac II, skip the SA Module, AutoSteer Valve connection and System Cable connection installation provided in this manual. Refer to your electric steering product manual for additional instructions.

Vehicle Inspection

Before beginning the AutoSteer system installation confirm the vehicle steering system is in good working order. Drive the vehicle and verify the vehicle is in correct working order. Also, ensure the following system operations and components:

- Verify you can turn the vehicle.
- Ensure the vehicle steers straight.
- Check for loose or worn steering components.
- Check for hydraulic fluid leaks throughout the system.
- Ensure the hydraulic fluid level is correct.
- Service the vehicle if the steering is not in good working order.

Installation Procedure Outline

1. Verify shipped components.
2. Install the Wheel Angle Sensor if necessary.

Note: The Wheel Angle Sensor is optional and most installations do not require a Wheel Angle Sensor.

---

3. Install the SA Module.
4. Install the Roof Module.
5. Install the Display.
6. Install the SA Module Harness.
7. Install the Main Cable Harness.
8. Ensure all connectors are properly coupled.
9. Power ON the AutoSteer system.
10. Calibrate the vehicle.
11. Tune the vehicle.
12. Verify installation and system operation.

Kit Overview

Figure 1-1 Installation Kit Components (PN: 188-0040-01)

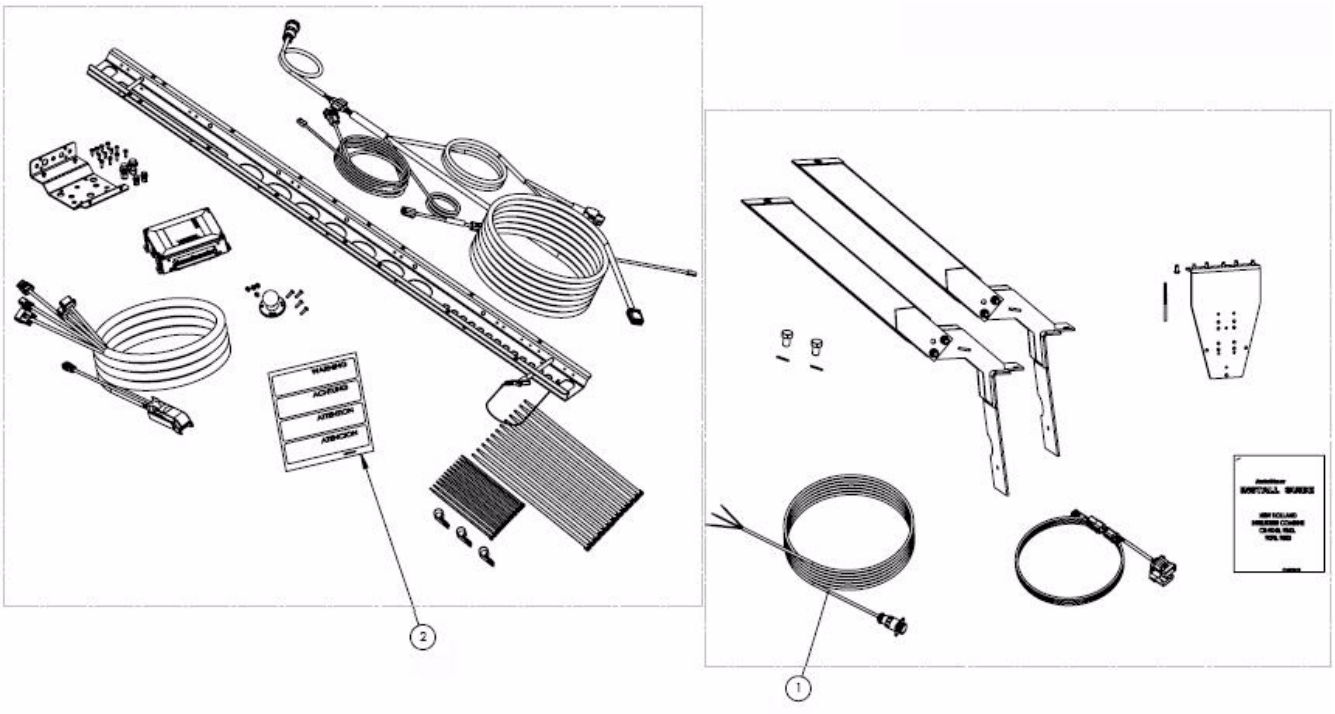


Table 1-1 Installation Kit Components (PN: 188-0040-01)

Item	Component	Part Number
1.	Bracket Kit	152-0055-01
2.	Common Kit	153-0009-01

Assemblies

- *Bracket Kit Components*
- *Common Kit Components*

Bracket Kit Components

Figure 1-2 Bracket Kit Components (PN: 152-0055-01)

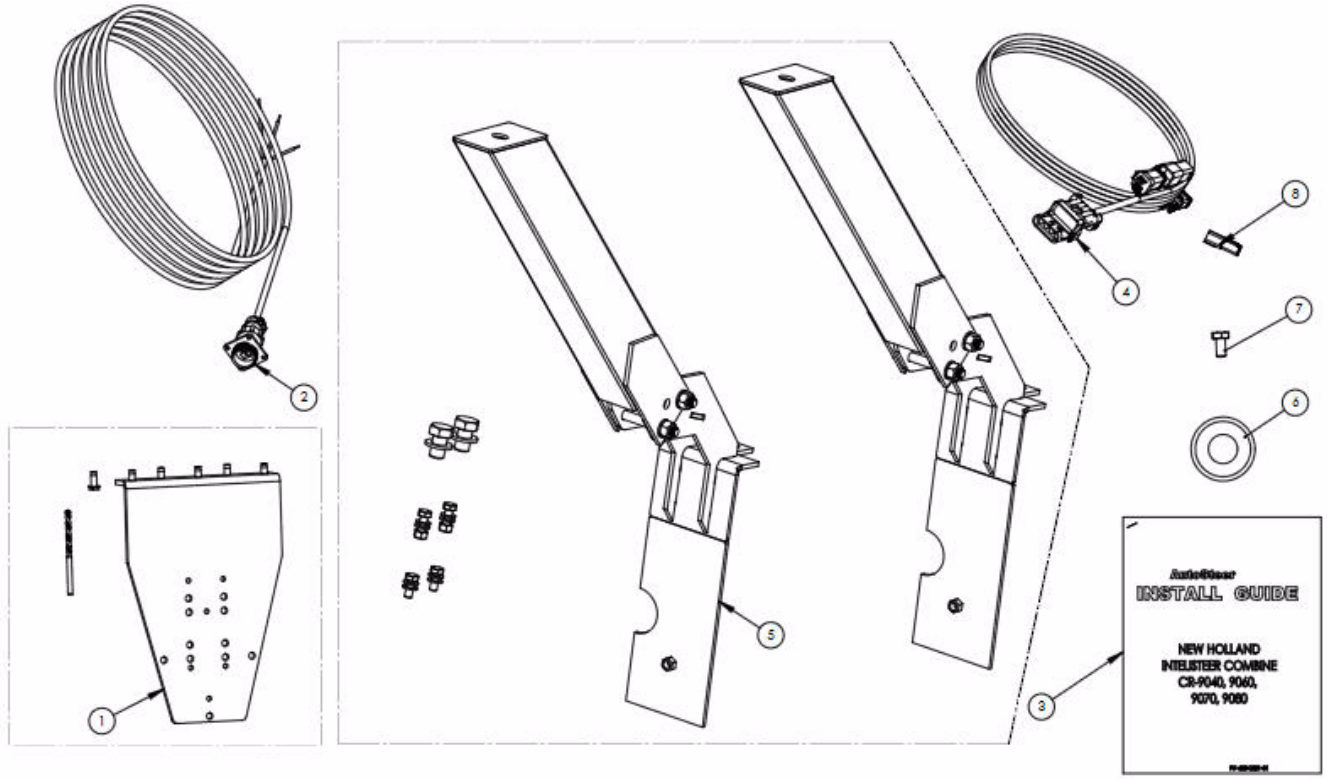


Table 1-2 Bracket Kit Components (PN: 152-0055-01)

Item	Component	Part Number
1.	Display Bracket	200-0173-02
2.	Battery Power Adapter Cable	201-0156-01
3.	Installation Guide	602-0231-01
4.	Encoder Adapter Cable	201-0438-01
5.	Roof Bracket Kit	200-0529-01
6.	Grommet	508-0013-01
7.	Bolt M10 x 1.5	513-0019-01
8.	Steering Encoder Terminator	311-0342-01

Common Kit Components

Figure 1-3 Common Kit Components (PN: 153-0009-01)

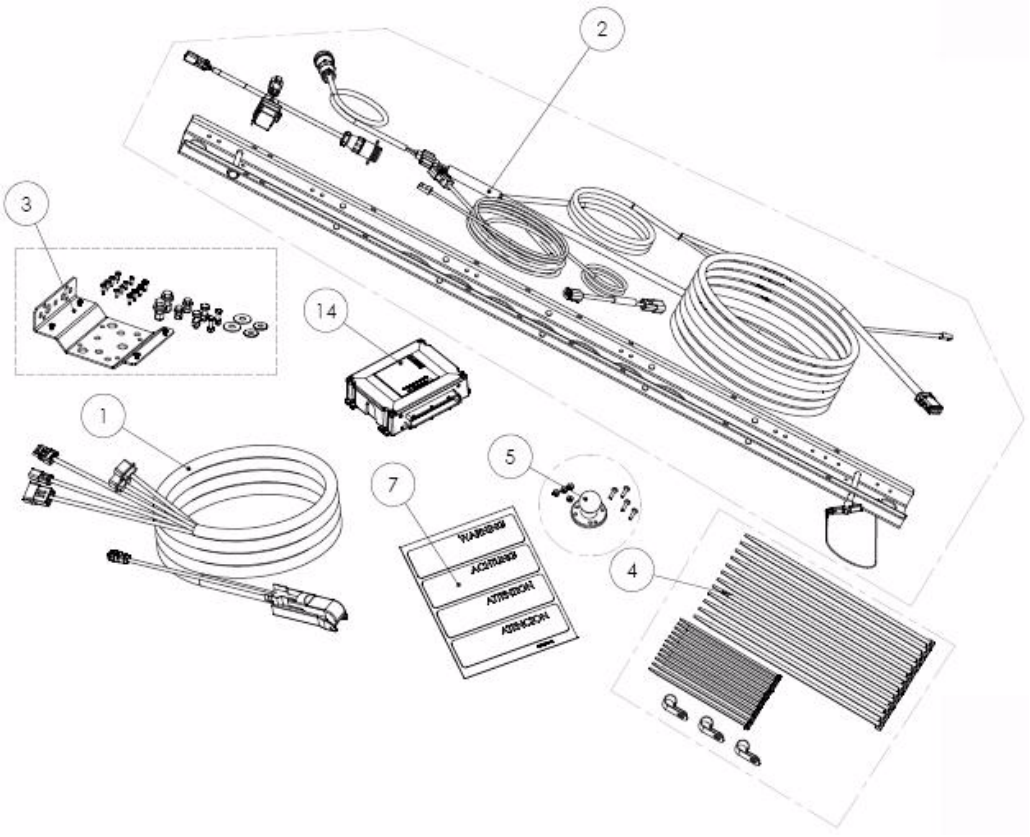
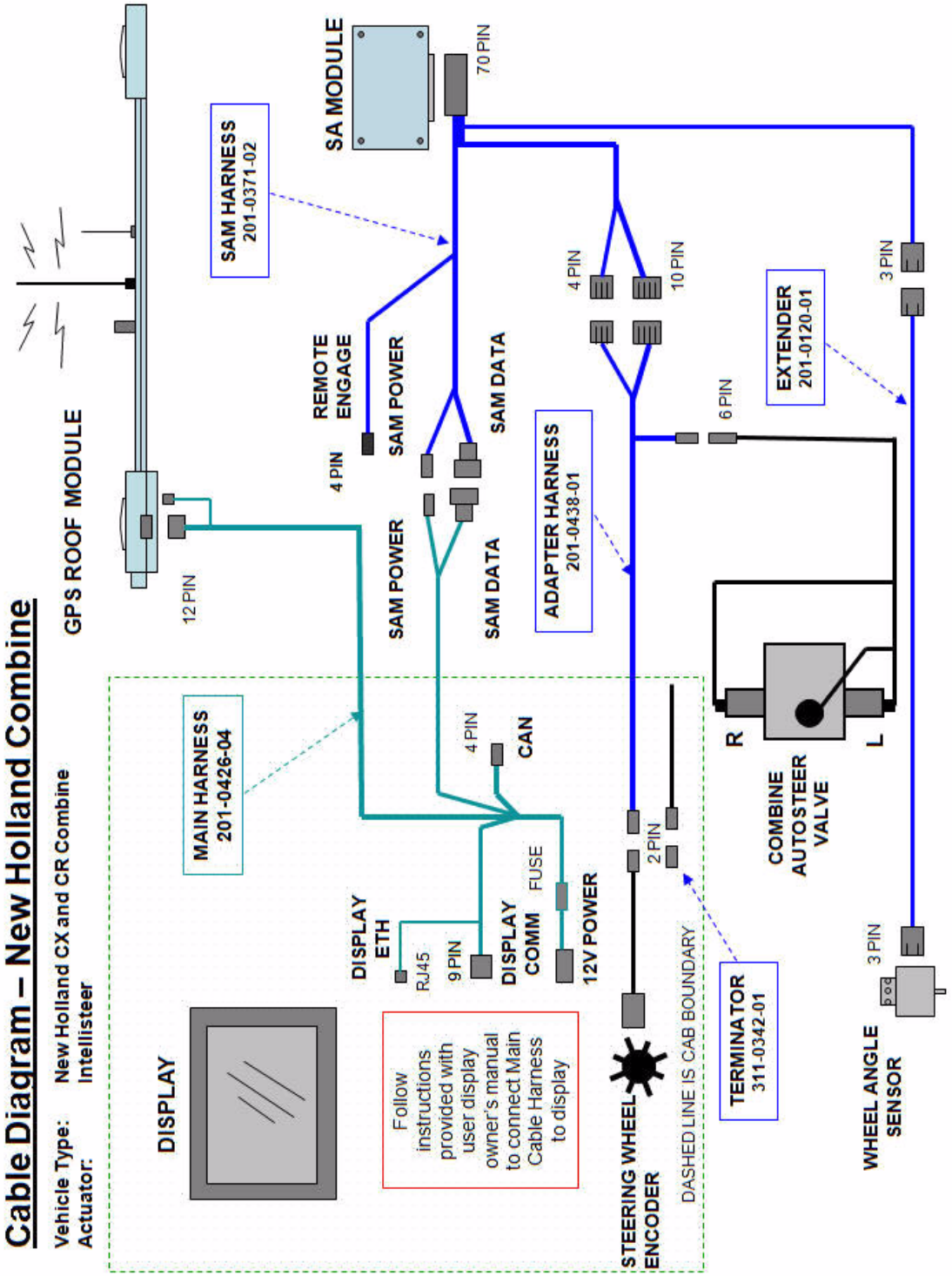


Table 1-3 Common Kit Components (PN: 153-0009-01)

Item	Component	Part Number
1.	SA Module Harness	201-0371-02
2.	Common Assembly Kit	200-0497-02
3.	SA Module Bracket	200-0190-01
4.	Mounting Hardware	200-0076-01
5.	Display RAM Mount	200-0508-01
7.	Warning Labels	603-0074-01
14.	SA Module Assembly	200-0206-01

Cable Diagram



Wheel Angle Sensor (WAS) Installation

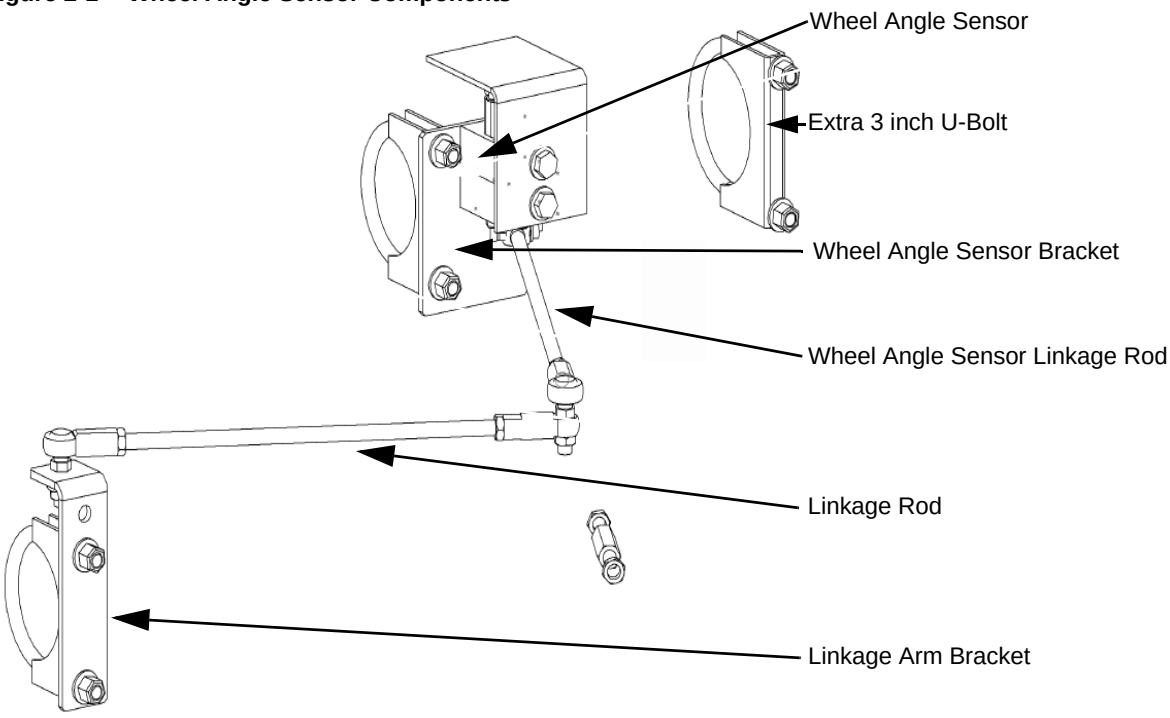
This **Wheel Angle Sensor Installation** chapter information is provided in the following sections:

- *Mounting Wheel Angle Sensor Hardware*
- *Cutting Linkage Rods to Length*
- *Assembling Linkage Rod Hardware*
- *Attaching and Adjusting Wheel Angle Sensor Linkage Rods*

Mounting Wheel Angle Sensor Hardware

1. The Wheel Angle Sensor components are shown in *Figure 2-1*.

Figure 2-1 Wheel Angle Sensor Components



2. Identify the Wheel Angle Sensor mounting location on the rear axle left side.
3. Secure the Wheel Angle Sensor bracket to the steering cylinder in the position shown in *Figure 2-2*.

Note: Use either the 2 3/4" or 3" U-Bolt according to steering cylinder diameter.

4. Tighten the U-bolt nuts with a 9/16" socket and ratchet. See *Figure 2-2*.

Figure 2-2 Attaching the Sensor to the Bracket

5. Secure the Wheel Angle Sensor to the bracket with the two bolts provided. See *Figure 2-3*.

Figure 2-3 Wheel Angle Sensor Axle Bracket Mounted

6. Mount the linkage bracket in the position shown in *Figure 2-4*.
7. Secure the bracket with the provided U-bolt.

Figure 2-4 Mounting Linkage Bracket

Cutting Linkage Rods to Length

Note: Before cutting the linkage rods, verify the wheel angle sensor brackets will attach to the vehicle as shown in this manual and they are attached the correct distance from any reference points shown. If this is not possible, do not cut the rods until it is determined if these lengths will work for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for ensuring the rods are cut to the proper length.

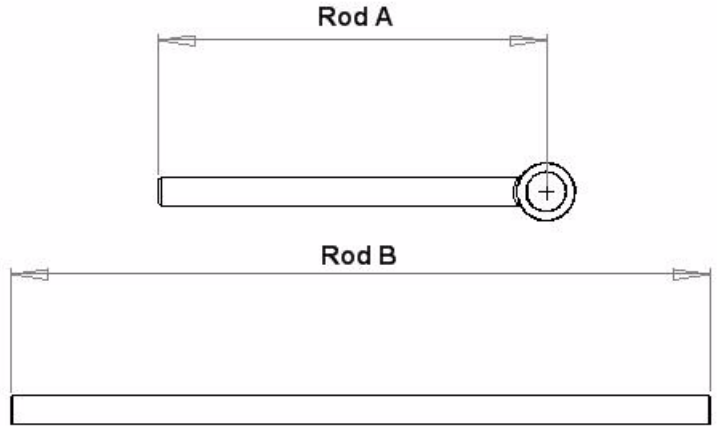
1. Measure and mark the two linkage rods for cutting, according to the length shown in *Table 2-1*.

Note: *Figure 2-5* shows the measurement points used to properly cut the linkage rods.

Table 2-1 Linkage Rod Cut Lengths

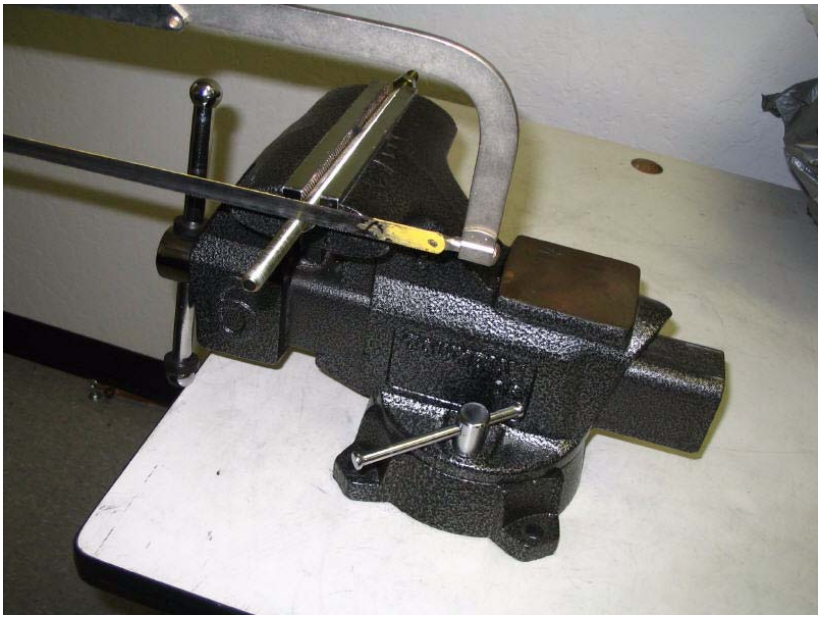
Item	Length
Rod A	8.6 inches (220 mm)
Rod B	11.6 inches (295 mm)

Figure 2-5 Linkage Rod Cut Length Measurement Points



2. Use a hack saw to cut the linkage rod to length while it is held in a bench vise. See *Figure 2-6*.

Figure 2-6 Linkage Rod Cutting

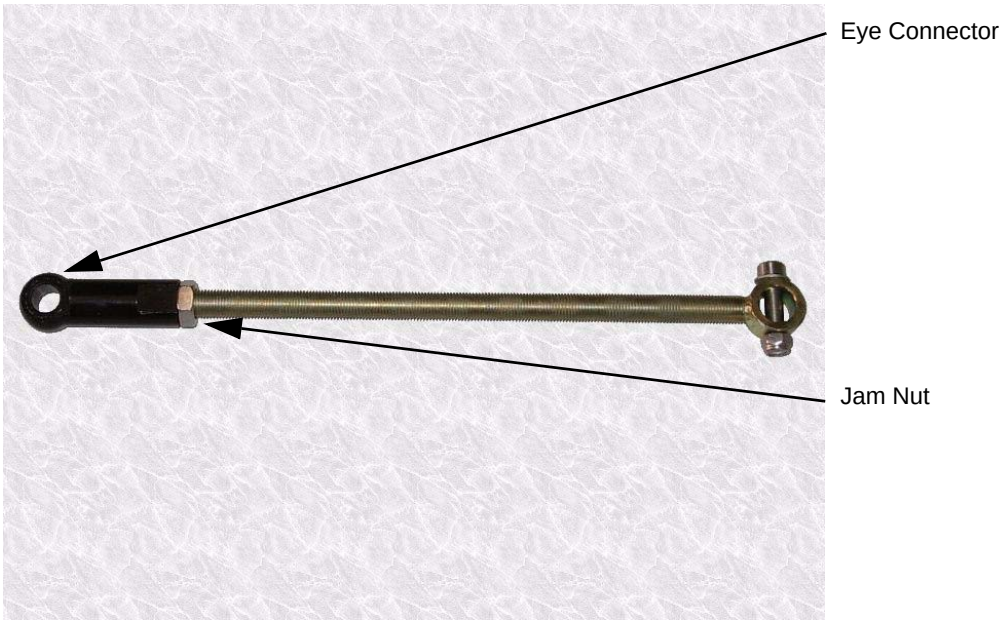


Assembling Linkage Rod Hardware

1. Attach a jam nut to the end of Rod A. See *Figure 2-7*.
2. Connect the eye connector to the end of the wheel angle sensor rod. As shown in *Figure 2-7*.

Note: The threaded rods must be cut to the correct lengths before final assembly.

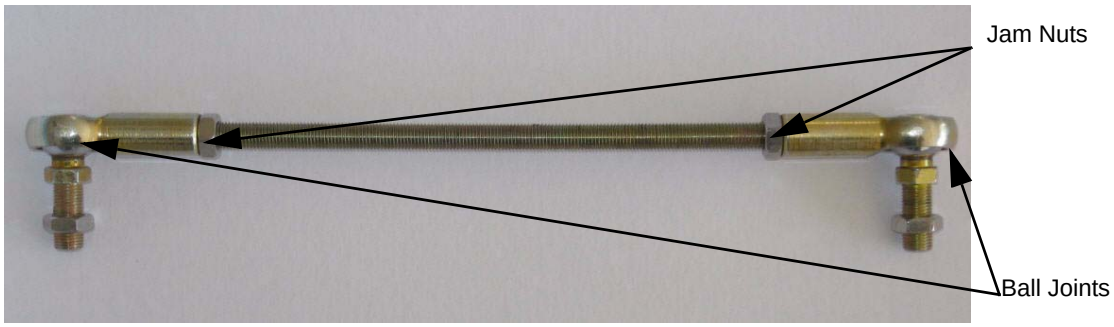
Figure 2-7 Rod A Assembled



3. Attach the jam nuts to each end of linkage Rod B
4. Attach the ball joints to both ends of the linkage arm as shown in *Figure 2-8*.

Note: The bolts for the ball joints should be facing the same direction as shown in *Figure 2-8*.

Figure 2-8 Linkage Rod Assembled

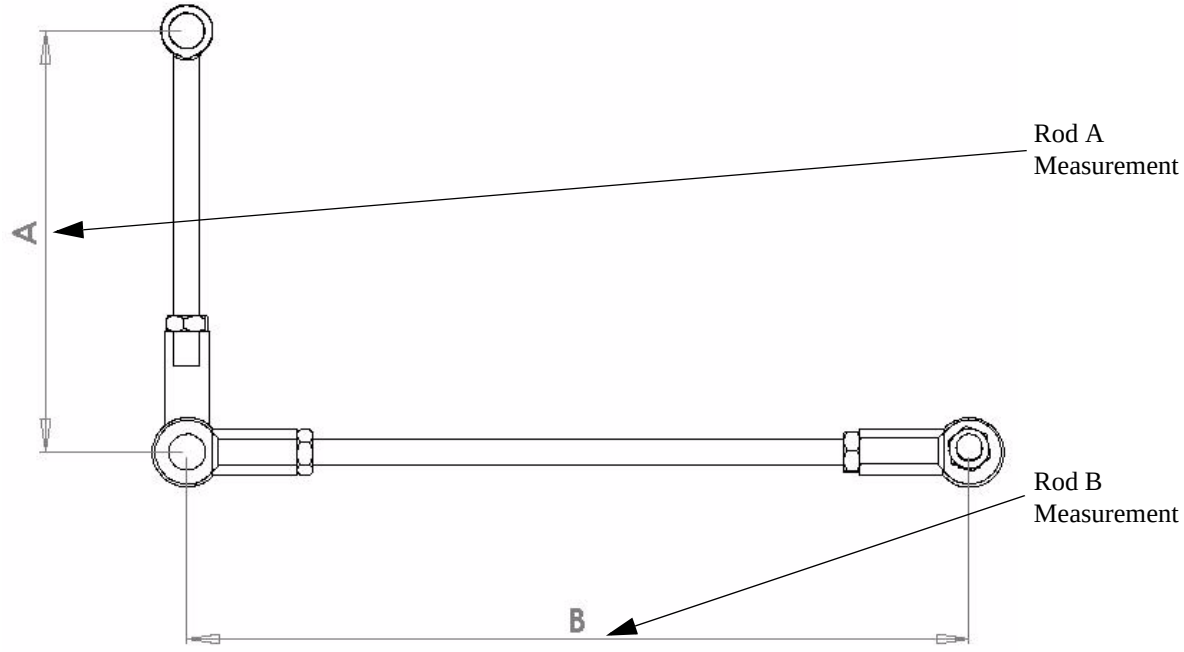


Note: The linkage rod after-assembly center-to-center lengths are shown in *Table 2-2*. *Figure 2-9* shows the measurement points for the assembled linkage rods.

Table 2-2 Assembled Linkage Rod Length

Item	Length
Rod A	9.6" (245mm)
Rod B	13.6" (345mm)

Figure 2-9 Linkage Rod Measurement Points (Assembled)

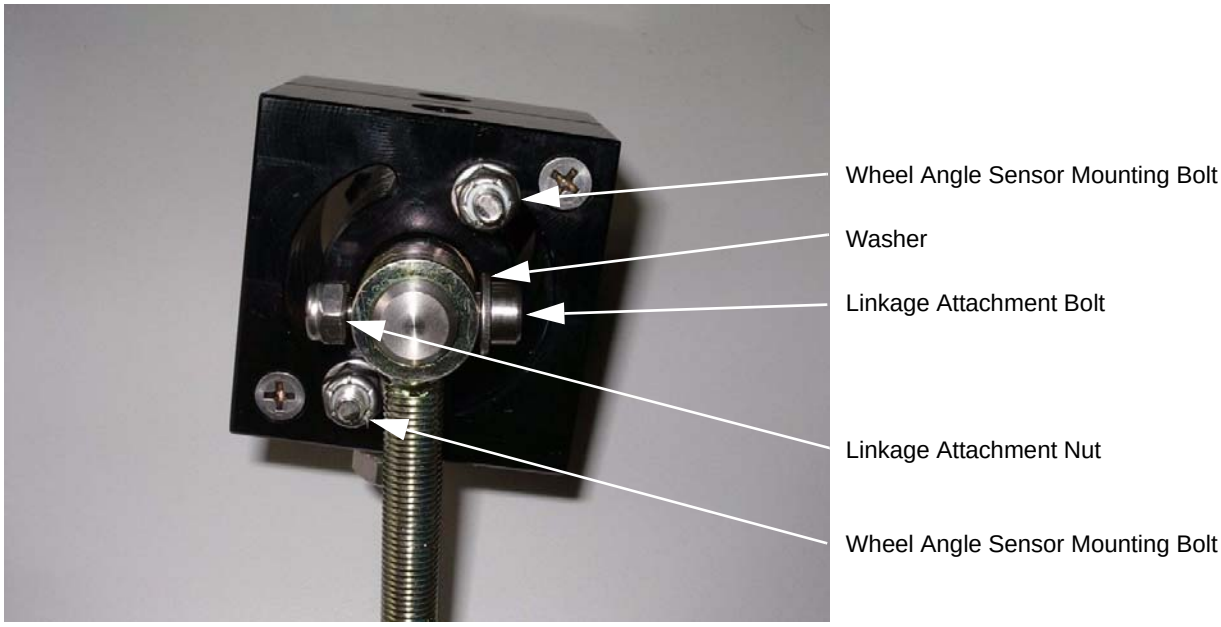


Attaching and Adjusting Wheel Angle Sensor Linkage Rods

1. Attach the Wheel Angle Sensor linkage rod to the Wheel Angle Sensor. See *Figure 2-10*.

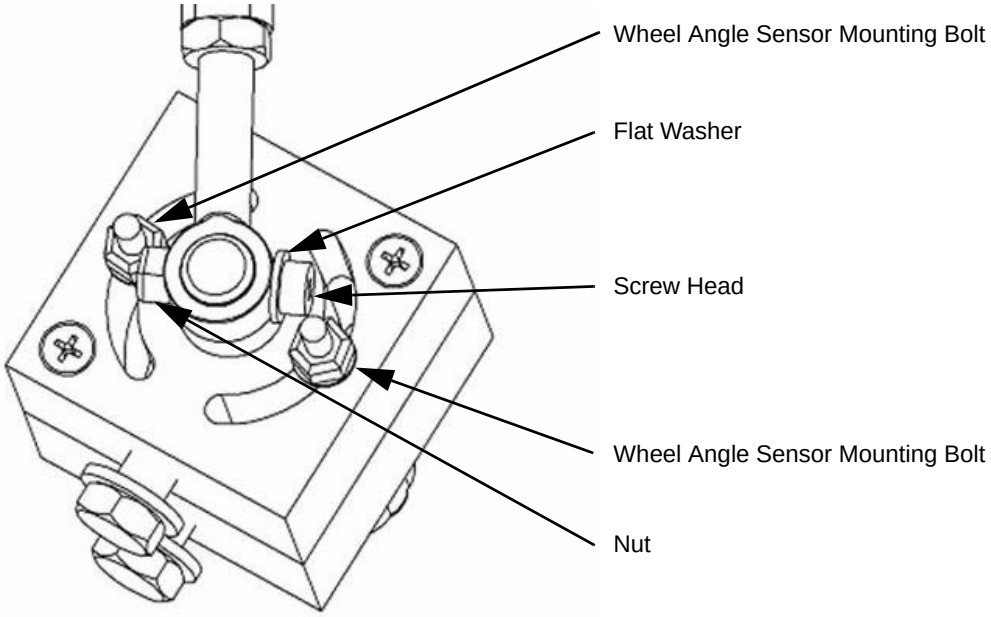
Note: Leave the Wheel Angle Sensor mounting bolts loose so the sensor can be rotated after installation on the vehicle.

Figure 2-10 Attaching the Linkage Arm to the Sensor (shown on bench)



2. Ensure a flat washer is placed under the screw head when attaching the linkage rod to the sensor shaft. See *Figure 2-11*.

Figure 2-11 Washer on Shaft Screw



Note: The washer should be on the bolt head side and not the nut side of the assembly.

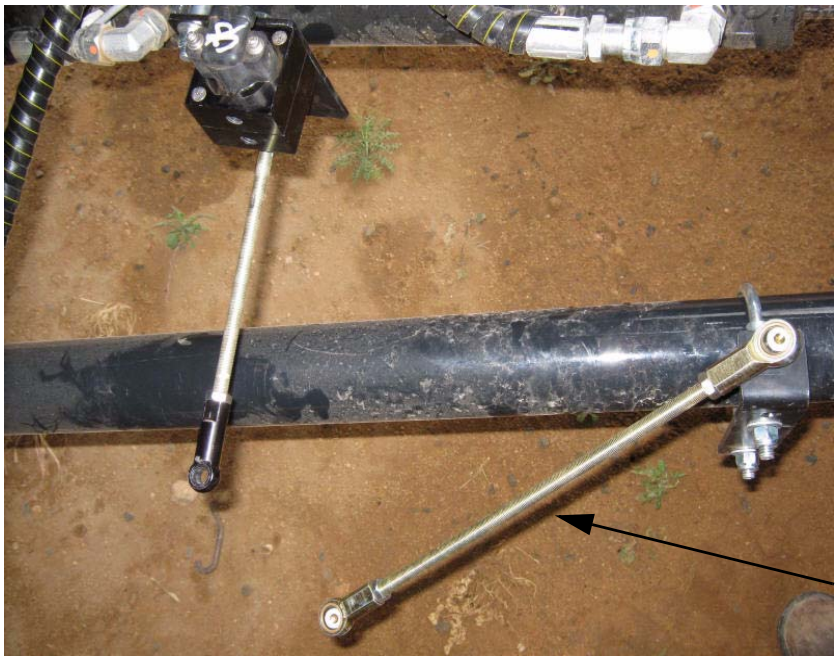
Note: Do not turn the steering system or drive the vehicle before the wheel angle sensor has been adjusted. The potentiometer can only rotate a maximum of 180 degrees and if it is rotated beyond its mechanical stops, it will be permanently damaged.

Note: Do not attach the remaining linkage arm.

3. Attach the linkage arm to the linkage bracket and tighten the ball joint to the bracket.
4. Tighten the ball joint to the bracket with a 1/2" and 9/16" wrench.

Note: Do not attach linkage rod to wheel angle sensor rod at this time.

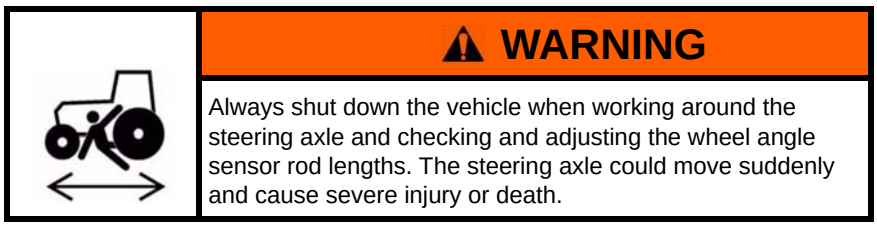
Figure 2-12 Linkage Rod Connected to Steering Cylinder Bracket



5. With the linkage rods disconnected, turn the steering wheel so the wheels are centered (the vehicle will travel straight ahead when moving).
6. Temporarily attach the linkage rods.

Note: Never attach the linkage rods to wheel angle sensor rod and turn the steering system manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering system is turned to the maximum right and left positions and then temporarily attached at these positions. Failure to do this may cause the wheel angle sensor or vehicle to become damaged.

Note: After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.


WARNING
Always shut down the vehicle when working around the steering axle and checking and adjusting the wheel angle sensor rod lengths. The steering axle could move suddenly and cause severe injury or death.

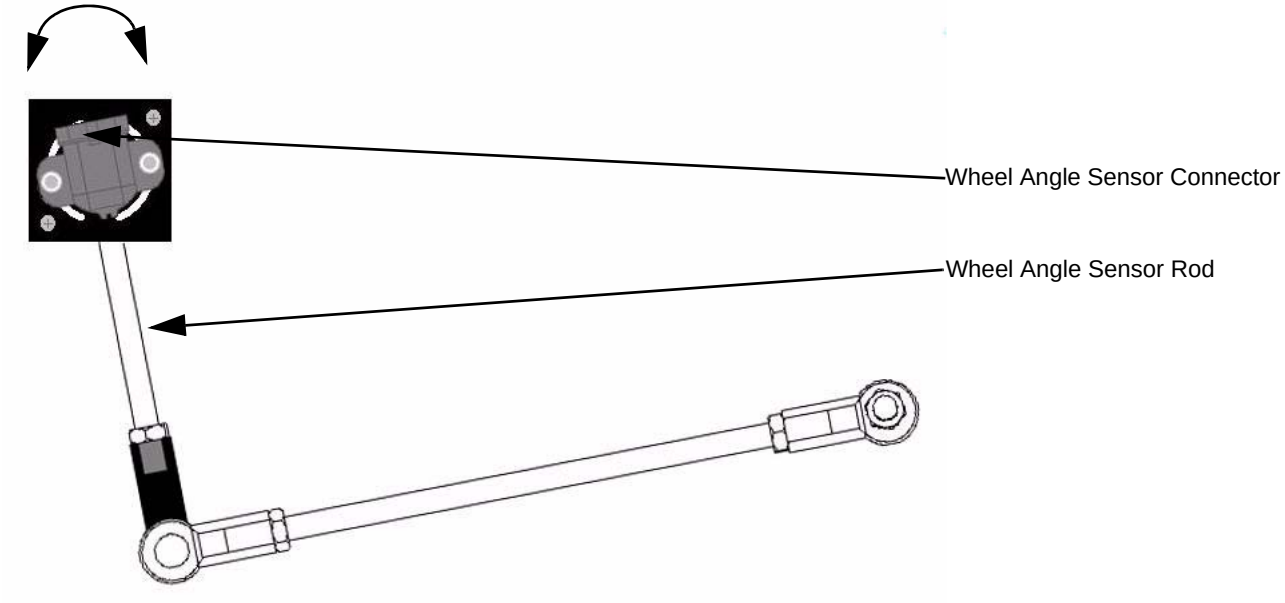
7. Rotate the wheel angle sensor potentiometer on top of the mounting block so that the wire connector is parallel to the wheel angle sensor rod. See *Figure 2-13*.

Note: The vehicle should be parked in a straight ahead position when adjusting the potentiometer angle.

This installation requires the connector mounting direction as shown in *Figure 2-13*. This connector orientation enables the Wheel Angle Sensor protective cover to be mounted later. However, the connector can be mounted 180 degrees opposite, when necessary to enable easier cable connection.

8. Tighten the potentiometer bolts with a 3/8" wrench and 5/32" Allen wrench.

Figure 2-13 Adjusting Potentiometer Angle



9. Disconnect the linkage rods and turn the steering wheel manually to the full left position.

10. Reattach the linkage assembly and verify that the sensor will not be damaged. See *Figure 2-14*,

11. Adjust the rod lengths as necessary.

Figure 2-14 Full Left Wheel Angle Sensor Test

12. Disconnect the linkage rods and turn the steering wheel manually to the full right position.

13. Reattach the linkage assembly and verify that the sensor will not be damaged. See *Figure 2-15*.

14. Adjust the linkage rod lengths as necessary.

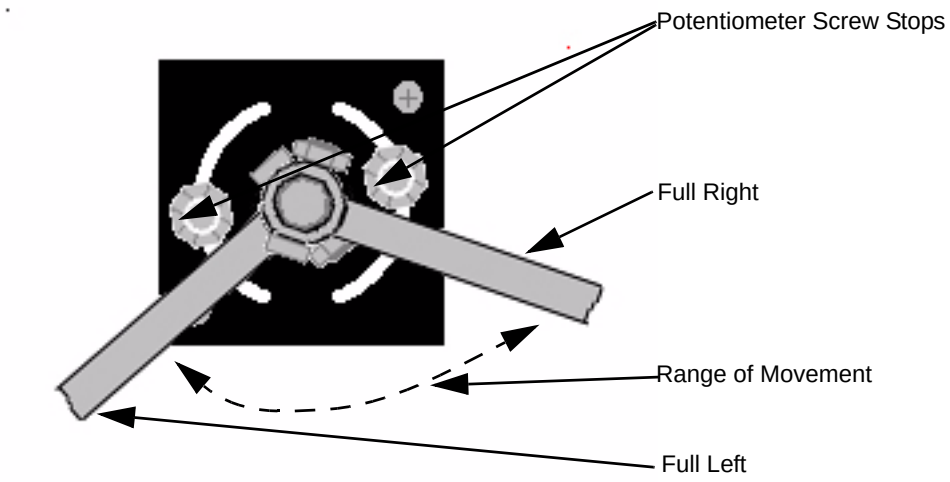
Figure 2-15 Full Right Wheel Angle Sensor Test

15. Rotate the sensor, adjust the length of either linkage arm and/or reposition the sensor mounting bracket on the vehicle frame (if necessary) to get the maximum sensor movement.

16. Test the remaining linkage arm for length at hard left and hard right to ensure sensor travel is not exceeded.

Note: The maximum movement is reached when the Wheel Angle Sensor rod sweeps from approximately 3/16 inch (5mm) from both stop bolts when the steering system is turned to the maximum right and left positions. See *Figure 2-16*.

Figure 2-16 Maximum Sensor Movement (as seen from bottom)



Note: An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 kilohms or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

17. When all the adjustments are complete, tighten all linkage rod lock nuts and bolts and the wheel angle sensor rod. See *Figure 2-17*.

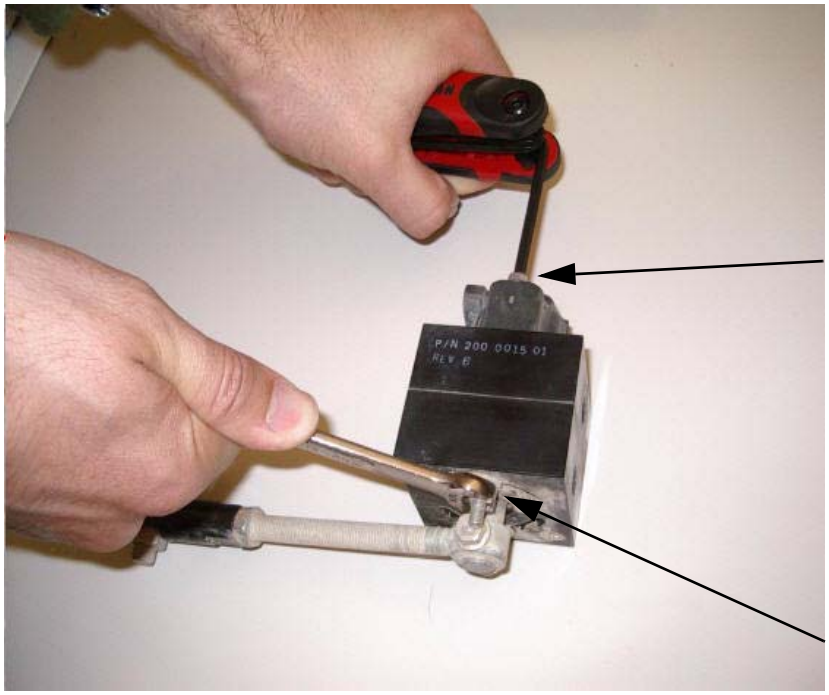
Note: A 1/2" and two 9/16" wrenches are required to tighten the connections.

Figure 2-17 Linkage Rod Ball Joint Bolt

18. Tighten the two screws securing the potentiometer to the wheel angle sensor, after final adjustments. See *Figure 2-18*.

Note: Use a 1/8" hex key and a 3/8" wrench.

Figure 2-18 Potentiometer Mounting Bolts (shown on bench)



19. The Wheel Angle Sensor installation is now complete. See *Figure 2-19*.

Figure 2-19 Wheel Angle Sensor Installed

SA Module Installation

This **SA Module Installation** chapter contains information on installing the AutoSteer SA Module.

Installation Procedure

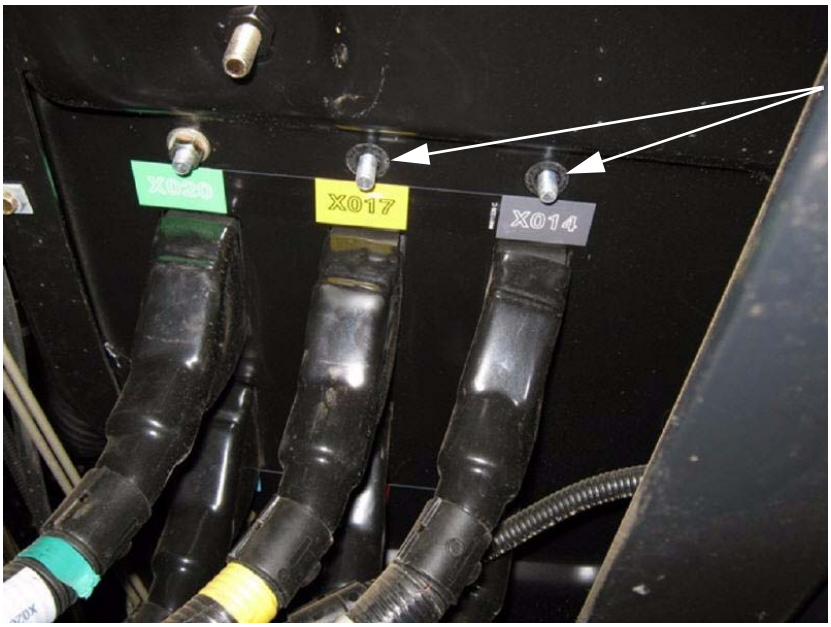
Note: The following instructions provide recommended SA Module mounting instructions. However due to the variety of options available on vehicles and the possible configuration differences, it may be necessary to install the SA Module in an alternative location. If an alternative location is required, choose a location where the SA Module is protected from damage from moving parts or crop debris and excessive moisture from weather and cleaning equipment.

1. Locate the space just below the cab front. See *Figure 3-1*.

Figure 3-1 SA Module Mounting Location

2. Identify the two studs coming through the floor, remove the nuts using a 13mm socket and ratchet. See *Figure 3-2*.

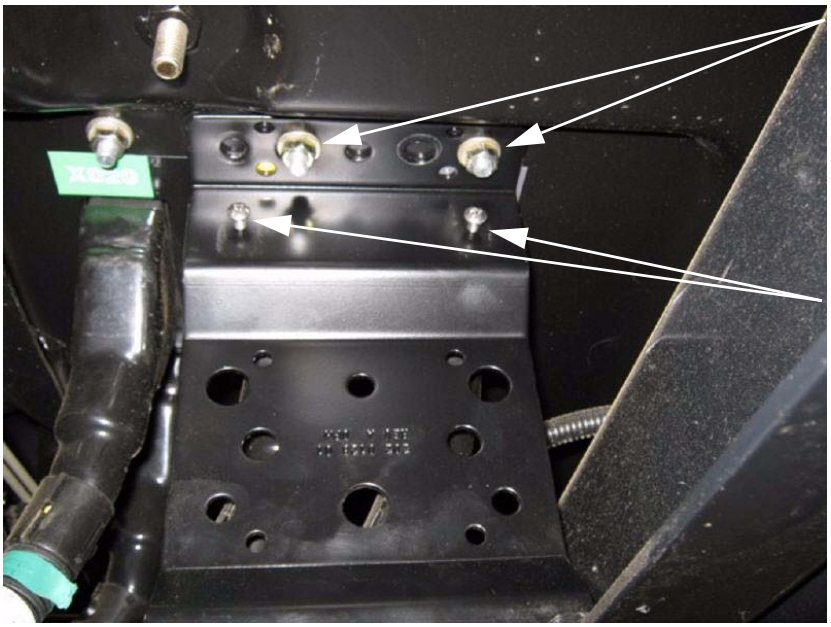
Figure 3-2 Existing Bolt to Use For SA Module Bracket Mounting



3. Install the top SA Module mounting screws in the bracket, do not mount the SA Module. See *Figure 3-3*.

4. Mount the SA Module bracket to the studs. Use the previously removed nuts and tighten with a 13 mm socket and ratchet. See *Figure 3-3*.

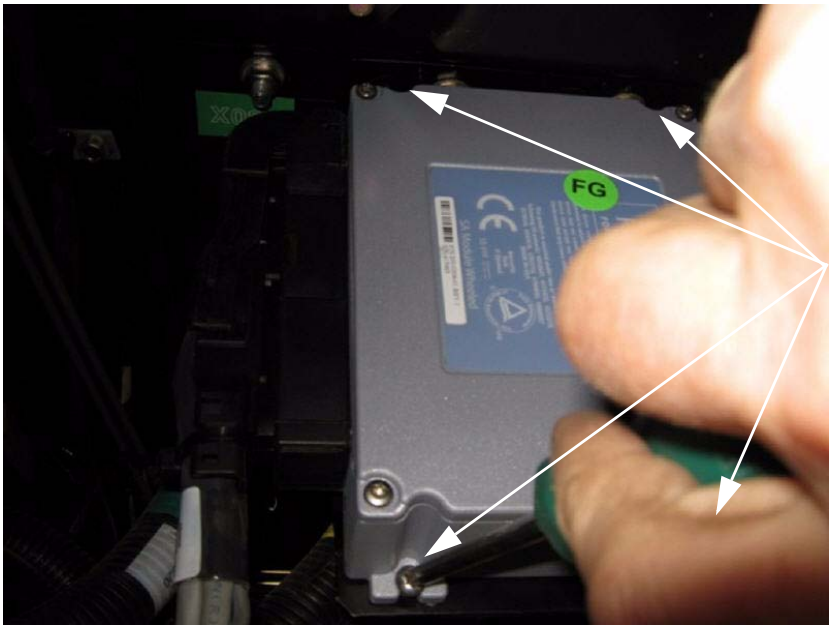
Figure 3-3 SA Module Bracket Mounted



5. Mount the SA Module to the SA Module bracket using the screws provided and a #2 Phillips screwdriver. See *Figure 3-4*.

Note: It may be easier to connect SA Module Harness to SA Module before mounting SA Module to bracket.

Figure 3-4 Mounting SA Module to Bracket



Note: *Figure 3-5* and *Figure 3-6* show the correct and incorrect SA Module installation orientation.

Figure 3-5 Correct SA Module Orientation

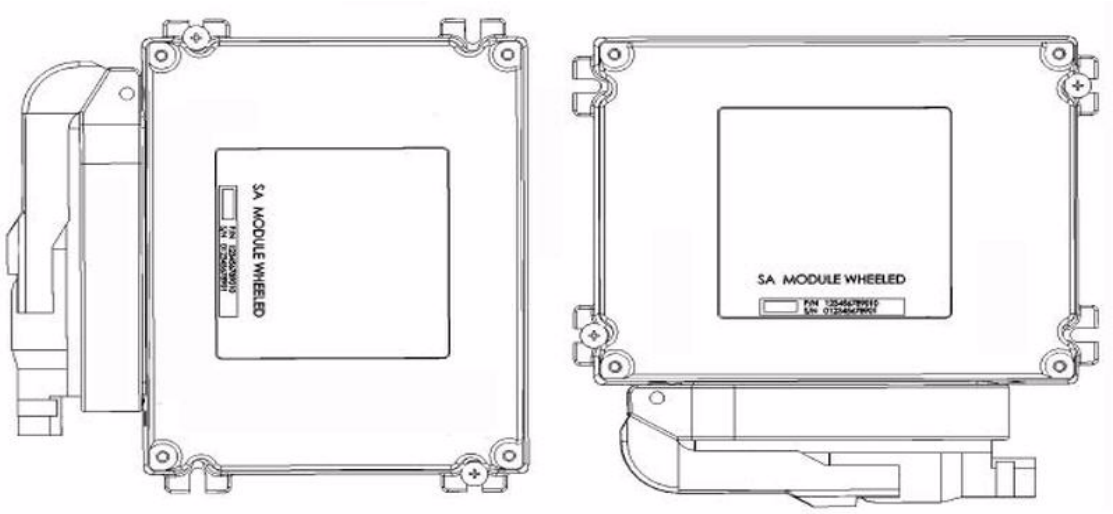
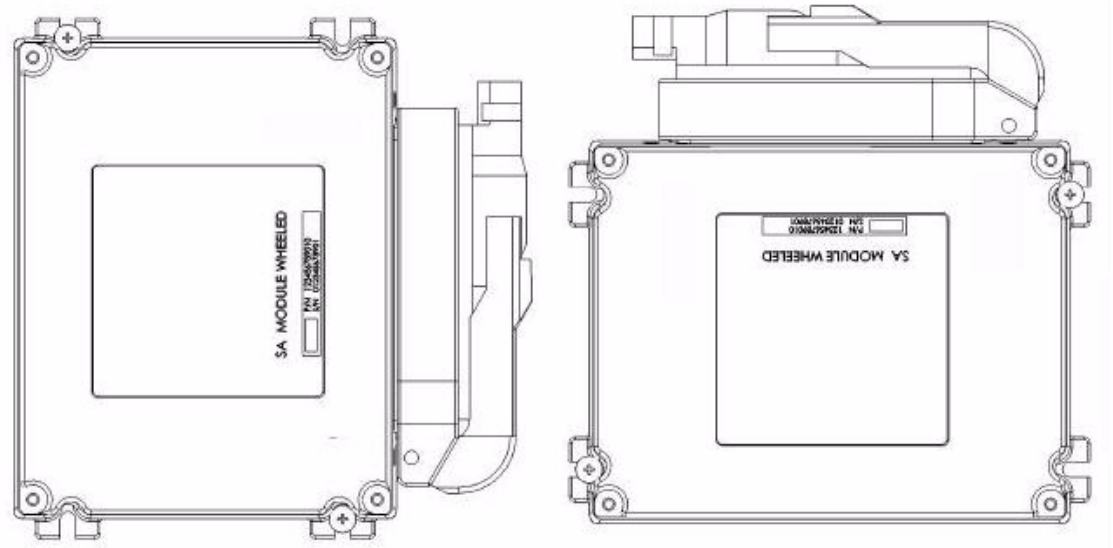


Figure 3-6 Incorrect SA Module Orientation



Roof Module Installation

This **Roof Module Installation** chapter contains information in the following sections:

- *Safety Notes*
- *Installation Procedure*

Safety Notes

- The AutoSteer system must be powered OFF when installing or removing the Roof Module.
- The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (50 kph).
- Ensure you are in a safe position when attempting to access the cab roof. If necessary for safety, use a ladder to access the roof. Ensure you do not fall or drop the Roof Module.

⚠ WARNING

To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.

⚠ WARNING

To prevent injury from collisions with low structures or power lines, always remove the Roof Module and fold down the mounting rail before transporting the combine or driving on roads.

Installation Procedure

1. Identify the two coach head bolts on the grain tank horizontal surface. See *Figure 4-1*.

Figure 4-1 Roof Bracket Mounting Bolts

2. Remove and discard the two coach head bolts and nuts using a 13mm wrench. See *Figure 4-2*.

Figure 4-2 Removing Existing Bolts

3. Place the roof module bracket in position. See *Figure 4-3*.
4. Install M8 x 20 bolt and Nyloc nut supplied.

Note: Do not tighten the bolts yet.

Figure 4-3 Positioning Roof Rail Brackets

5. Inside the grain tank measure from the inside corner down 9.37 inches (238mm) using a steel ruler. See *Figure 4-4*.

Figure 4-4 Measuring Drilling Location Vertical Distance

6. Measure across from the internal vertical support 4.88 inches (124mm). See *Figure 4-5*.

7. Drill a 1/8" hole.

CAUTION

To prevent eye injury, wear eye protection when drilling holes on the vehicle or other hardware.

Note: This hole lines up with the Roof Module Bracket vertical mounting point. If this alignment is confirmed, re-drill the hole to 21/64".

Figure 4-5 Measuring Drilling Location Horizontal Distance

8. Repeat this on the other side for the other bracket.

9. Insert the M8 x 20 bolts into the holes and tighten them using a 13mm wrench. See *Figure 4-6*.

10. Tighten the previously installed bolts using a 13mm wrench and 13mm socket and ratchet.

Figure 4-6 Tightening the Bracket Mounting Bolts

11. *Figure 4-7* shows the roof module brackets installed.

Figure 4-7 Roof Module Brackets Installed

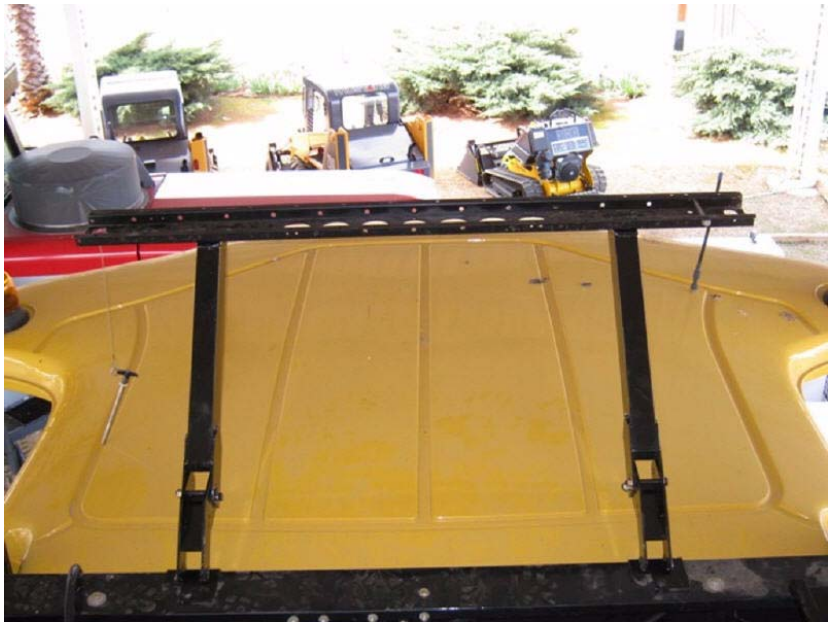
12. Attach the Roof Rail using bolts, nuts and washers supplied.

13. Tighten the mounting bolts securely with a 24mm socket and ratchet. See *Figure 4-8*.

Figure 4-8 Tightening Roof Rail Bolts

14. The Roof Rail is now installed. See *Figure 4-9*.

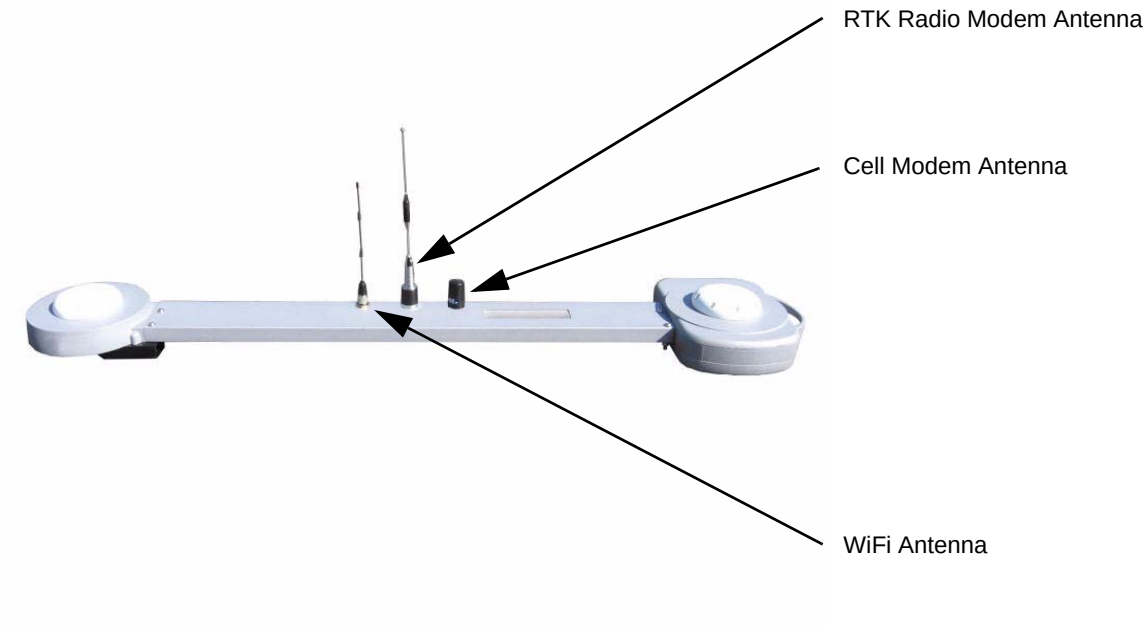
Figure 4-9 Roof Rail Installed



15. Attach the three antennas to the correct Roof Module antenna connections. See *Figure 4-10*.

Note: Hand tighten the connections. Do not use tools or over tighten.

Figure 4-10 Antennas Attached to the Roof Module

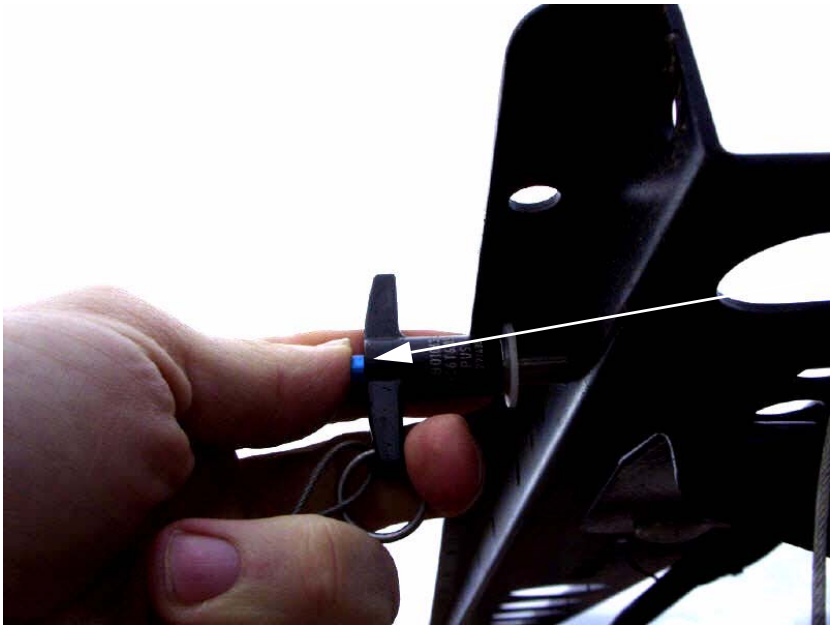


Note: Your installation may not require all three antennas to be installed.

16. Remove the locking pin from the Roof Rail. See *Figure 4-11*.

Note: Press the button on the end of the handle to enable pin removal.

Figure 4-11 Removing the Quick Release Pin



17. Place the Roof Module on the Roof Rail. See *Figure 4-12*.

Figure 4-12 Placing Roof Module of Roof Rail

18. Test the tightness of the Roof Module from side-to-side.

19. Reinsert the locking pin to lock the Roof Module onto the vehicle.

Figure 4-13 Reinserting the Locking Pin

20. The Roof Module is now installed. See *Figure 4-14*.

Note: The roof module mount can be lowered for vehicle transportation. See the *Post-Installation Procedures and Information* chapter *Lowering Roof Module for Vehicle Transportation* section for additional information.

Figure 4-14 Roof Module Installed

Display Installation

This **Display Installation** chapter contains information for installing the Display.

Note: The user terminal is installed under the door frame on the right side of the cab. Use the special screws provided in kit to secure the bracket under the door frame.

1. Drill five 13/64” holes in the cab frame for the screws using the bracket as a template. See *Figure 5-2*.

Note: If there is already a M10 threaded hole in the door frame, it can be used to mount the bracket in the middle hole Instead of drilling five bracket holes. See *Figure 5-1* to locate the M10 threaded hole

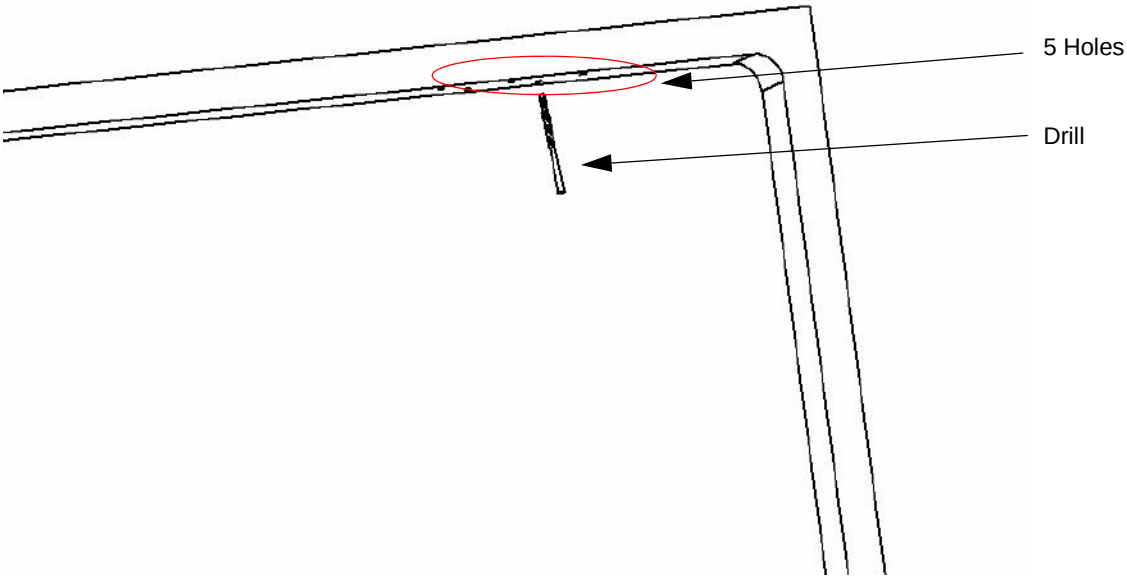
CAUTION

To prevent eye injury, wear eye protection when drilling, tapping or using power tools on the vehicle or other hardware.

Note: The middle hole must be drilled out to 25/64” diameter. Drill one hole to secure the bracket with one screw before drilling the remaining holes. The holes should be drilled so the bracket mounts in the position shown in *Figure 5-2* when looking at the right side door from inside the cab.

Figure 5-1 Pre-Drilled M10 Threaded Hole

Figure 5-2 Drilling Bracket Screw Holes



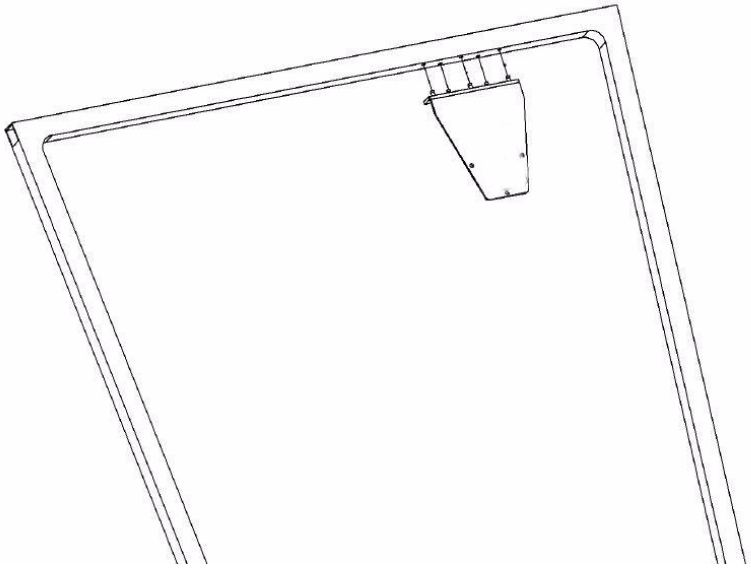
2. Position the bracket on the right-hand side of the cab. See *Figure 5-3*.

Figure 5-3 Position Bracket on Cab's Right-hand Side

3. Secure the bracket with five screws. See *Figure 5-4*.

Note: Use the 3/8 socket wrench to tighten the screws, which are self-tapping and cut their own threads in the steel.

Figure 5-4 Securing the Monitor Bracket



4. Install the RAM Mount Base Ball on the bracket using the four screws and lock nuts provided. Tighten the bolts using a #2 Phillips screwdriver and 3/8” wrench. See *Figure 5-5*.

Figure 5-5 Attaching the RAM Mount Ball

Note: Refer to the Display User Manual for the remaining Display specific installation instructions.

Connecting System Cables

This **Connecting System Cables** chapter provides information for connecting the Main Cable Harness and the SA Module Cable Harness to various vehicle and AutoSteer components in the following sections:

- *SA Module Harness*
  - *SA Module Connection*
  - *AutoSteer Wheel Angle Sensor Connection*
  - *Steering Valve Connection*
  - *Steering Encoder Connection*
- *Main Cable Harness*
  - *Roof Module*
  - *Display*
  - *Power Supply Connection*
    - *12V Cab Power Outlet*
    - *Battery Power Connection*
- *Install Warning Label*

SA Module Harness

This **SA Module Harness** section contains the following sub-sections:

- *SA Module Connection*
- *AutoSteer Wheel Angle Sensor Connection*

SA Module Connection

1. Locate the previously mounted SA Module. See *Figure 6-1*.

Figure 6-1 SA Module Location

2. Align the SA Module Harness connector to the SA Module. See *Figure 6-2*.
3. Open the connector latch lever. See *Figure 6-2*.

Figure 6-2 Connecting SA Module Connector (shown on bench)

4. Press the SA Module Harness connector onto the SA Module connector.

Note: You can damage the connectors if your force them into position. Do not force them together or use tools.

5. Press the latch lever closed until it clicks and locks the connector. See *Figure 6-3*.

Figure 6-3 Closing the SA Module Connector

Connector Latch

Note: If you need to disconnect the SA Module connector, you must open the latch lever before attempting to pull the connectors apart.

6. Close the cable connector locking mechanism as shown in *Figure 6-4*.

Figure 6-4 SA Module Connector (closed).

7. The SA module is now connected.

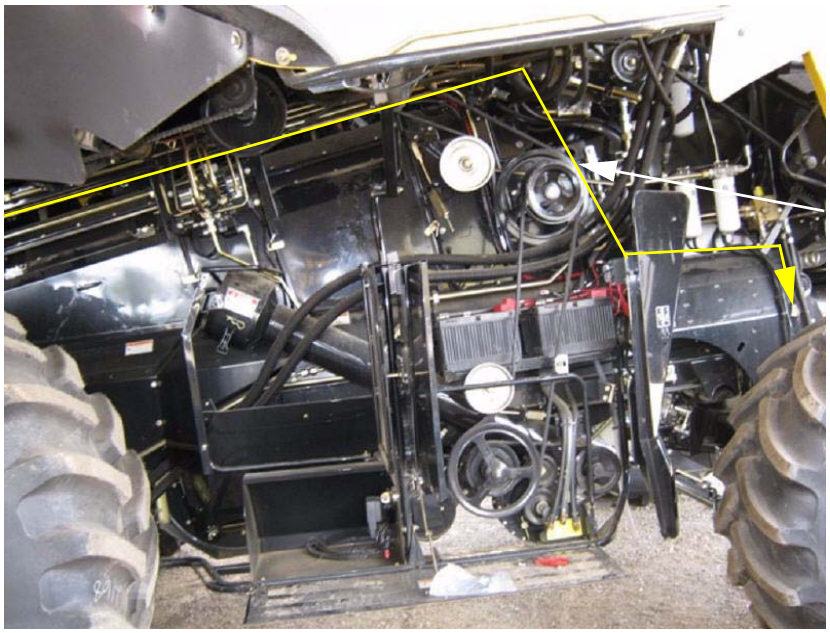
8. Proceed to the *AutoSteer Wheel Angle Sensor Connection* procedure.

AutoSteer Wheel Angle Sensor Connection

1. Route the SA Module Wheel Angle Sensor cable along the combine frame left side and secure it with cable ties.

Note: If the SA Module Harness does not reach the Wheel Angle Sensor an extension harness is available. PN: 201-0120-01

Figure 6-5 Routing SA Module Harness to the Wheel Angle Sensor



2. Attach the SA Module Harness Wheel Angle Sensor connector to the Wheel Angle Sensor. See *Figure 6-6*.

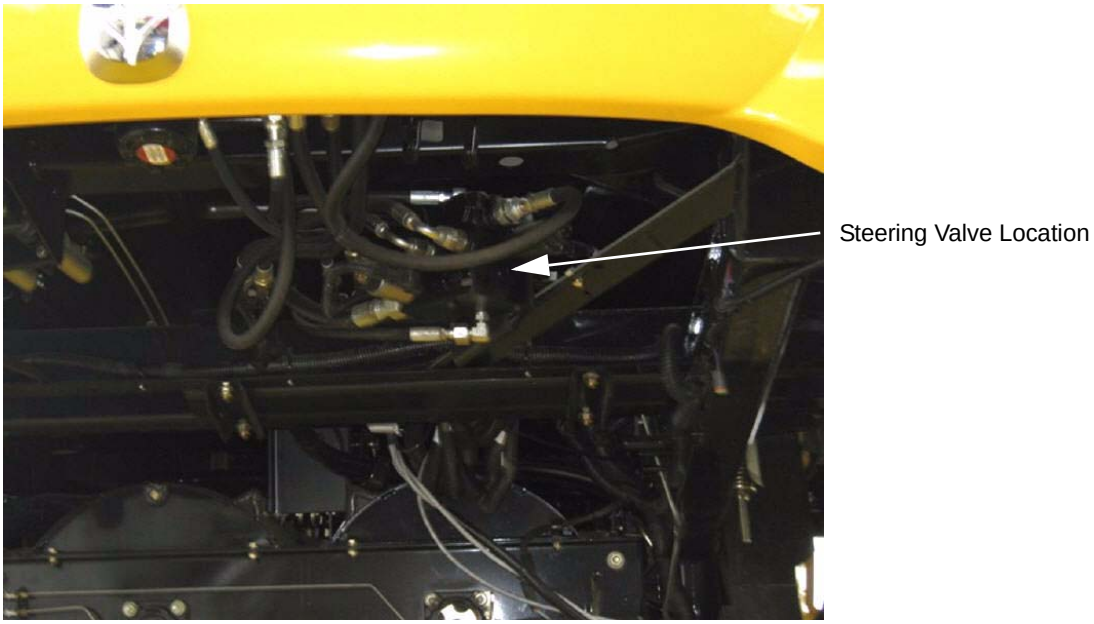
Figure 6-6 Wheel Angle Sensor Connection

3. Secure all cables with cable ties.

Steering Valve Connection

1. Locate the Steering Valve. See *Figure 6-7*.

Figure 6-7 Steering Valve Location



2. Disconnect the factory valve connector. See *Figure 6-8*.

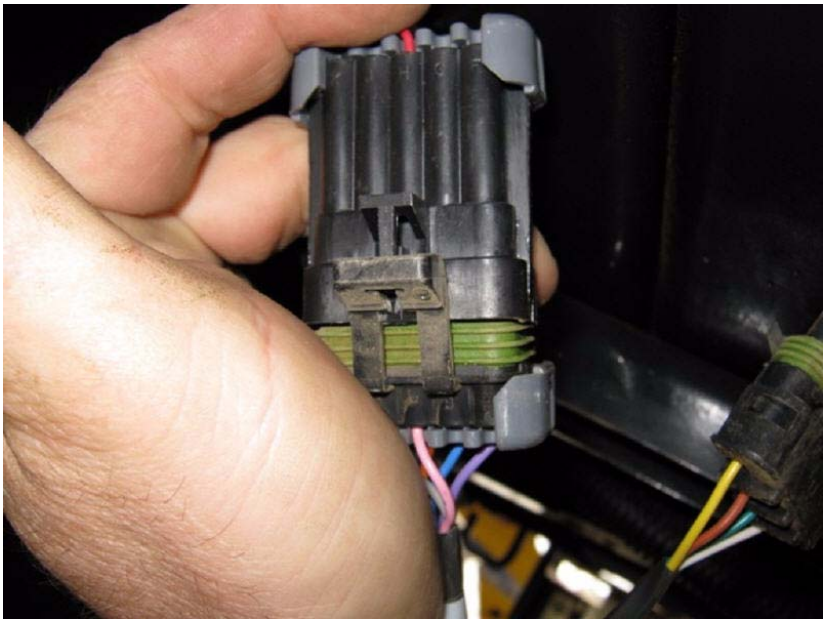
Figure 6-8 Disconnecting the Factory Steering Valve Connector

3. Connect the Steering Valve adapter cable to the factory Steering Valve connector and SA Module Harness connector. See *Figure 6-9*.

Figure 6-9 Connecting Steering Valve Adapter Cable To Factory Connector

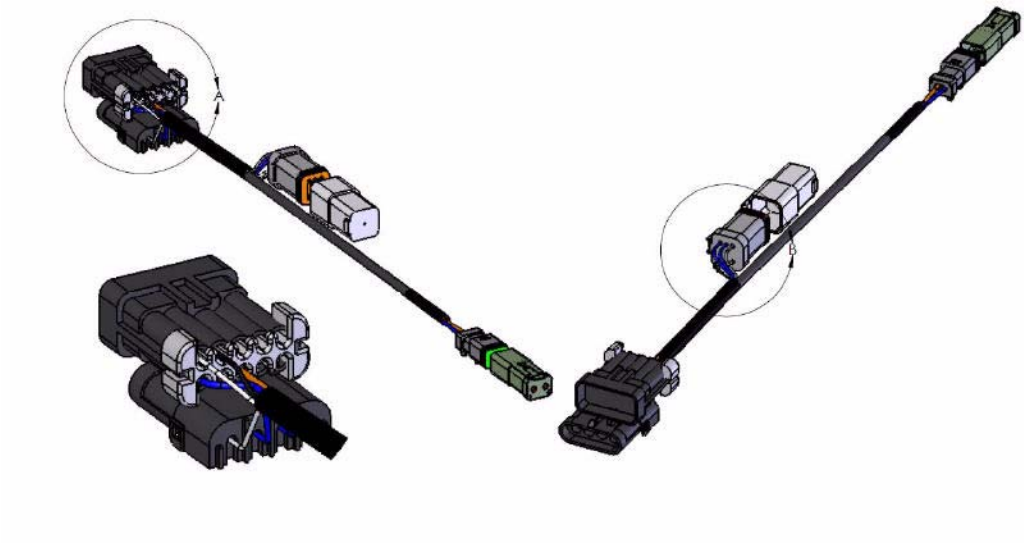
4. Connect the Steering Valve adapter cable opposite end to the SA Module Harness Steering Valve connector. See *Figure 6-10*.

Figure 6-10 SA Module Harness Adapter Cable Connection



Note: The adapter cable connects to the existing 10-pin and 4-pin connectors on the SA Module Harness. The adapter cable has a 6-pin connector that connects to the existing combine steering valve or valve harness. See *Figure 6-11*.

Figure 6-11 SA Module Adapter Cable



Steering Encoder Connection

1. Route the encoder cable underneath the cab and up through the cab floor feedthrough. See *Figure 6-12*.

Note: See the *Route Main Harness Into Cab* section for additional information on feeding cables through the cab floor.

Figure 6-12 Cab Floor Feedthrough

2. Run the encoder lead under the floor mat or around the edge of the floor mat to the steering column. See *Figure 6-13*.

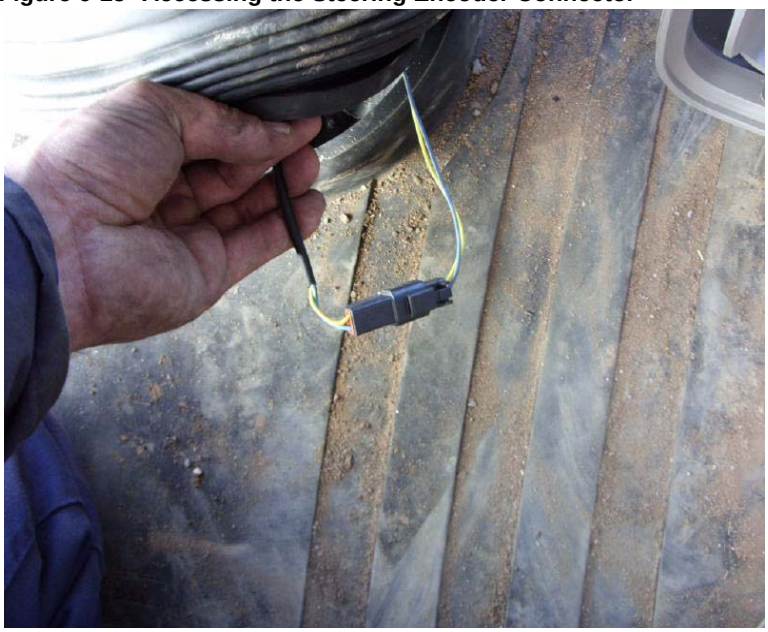
Figure 6-13 Going Under Floor Mat

3. Lift up the rubber boot at the base of the column to expose the connectors. See *Figure 6-14*.

Figure 6-14 Lifting Rubber Boot

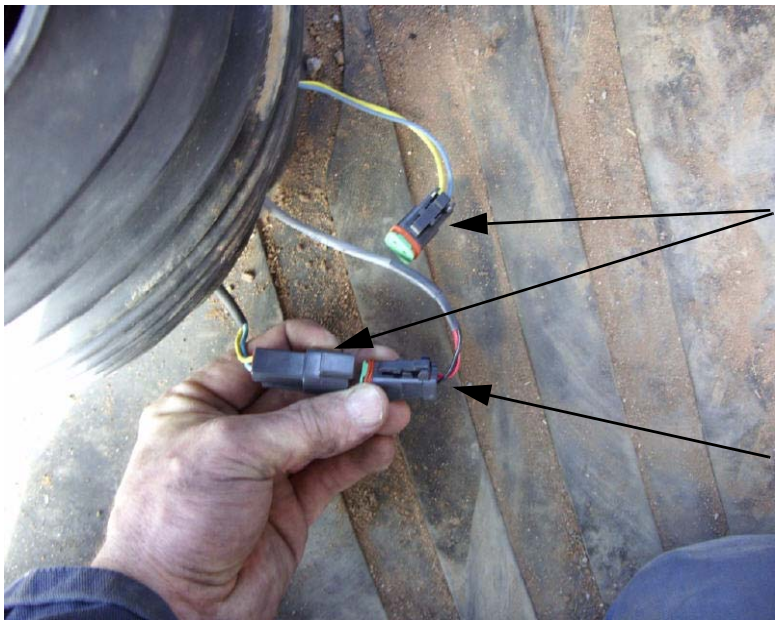
4. Pull out Deutsch connector between steering encoder and factory loom. See *Figure 6-15*.

Figure 6-15 Accessing the Steering Encoder Connector



5. Separate the encoder wiring harness (2-pin Deutsch with blue and yellow wires). See *Figure 6-16*.

Figure 6-16 Connecting SA Module Harness to the Encoder



6. Connect the encoder connector onto the steering encoder connector. See *Figure 6-17*.
7. Place the terminator supplied with the kit on the original vehicle steering encoder harness connector. See *Figure 6-17*.

Figure 6-17 Connected Steering Encoder Connector

Main Cable Harness

This Main Cable Harness section contains the following sub-sections:

- *Route Main Harness Into Cab*
- *Roof Module*
- *Display*
- *Power Supply Connection*

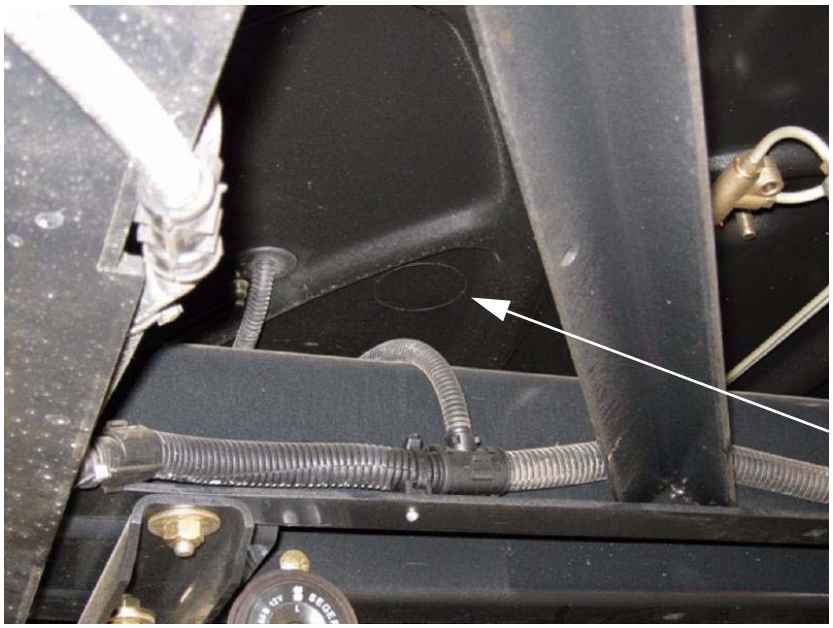
Route Main Harness Into Cab

1. Locate the Main Harness cab entry point on the cab floor right hand side. See *Figure 6-18*.

Figure 6-18 Cab Floor Main cable Harness Feedthrough Location

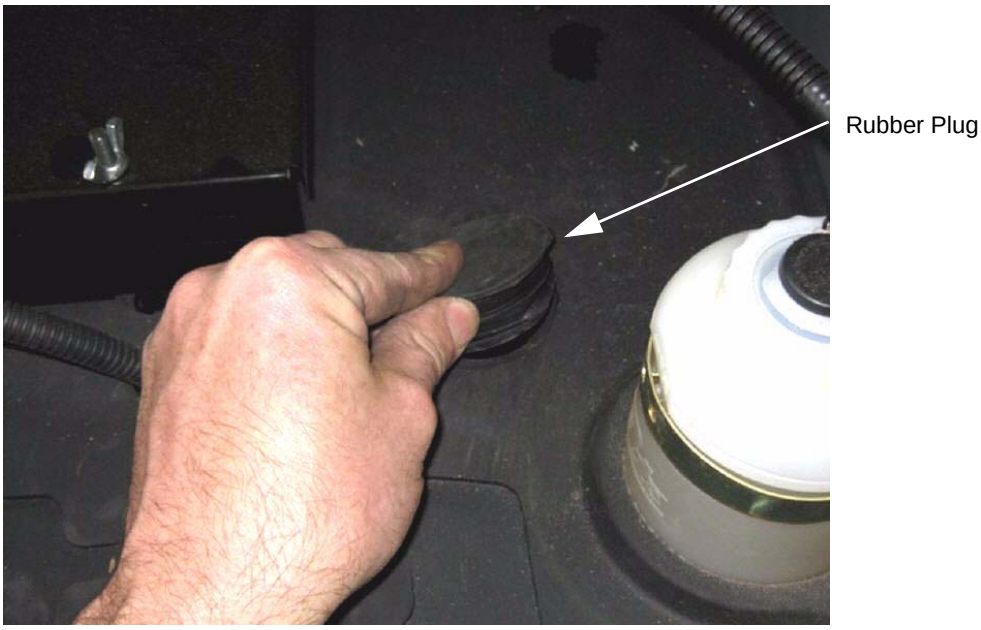
2. Identify the cab floor hole cut out. See *Figure 6-19*.

Figure 6-19 Cab Floor Feedthrough Knockout



3. Locate the rubber cab floor insert pass through plug. See *Figure 6-20*.

Figure 6-20 Rubber Insert Removal



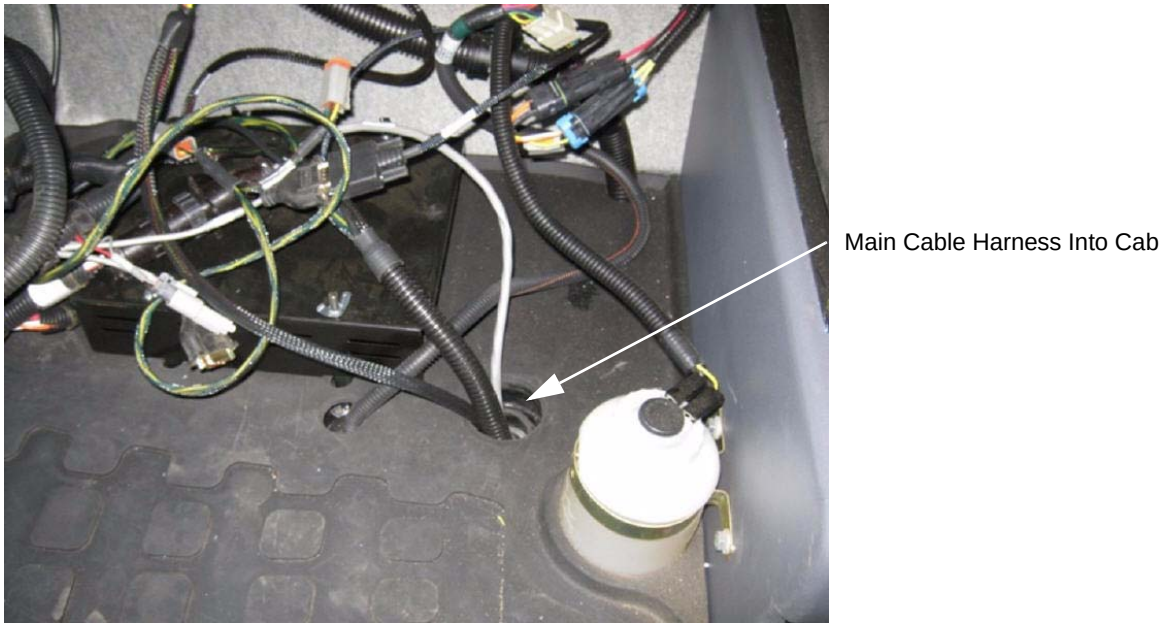
4. Use a hammer to remove the cab floor knockout. See *Figure 6-21*.

Figure 6-21 Removing Cab Floor Knockout

5. Feed the Main Harness into the cab through the cab floor feedthrough.

Note: Leave the bulk of unused Main Harness outside the cab.

Figure 6-22 Main Cable Harness Through Cab Floor



Connect to SA Module Harness

1. Attach the two SA Module Harness connectors to the Main Harness. See *Figure 6-23*.

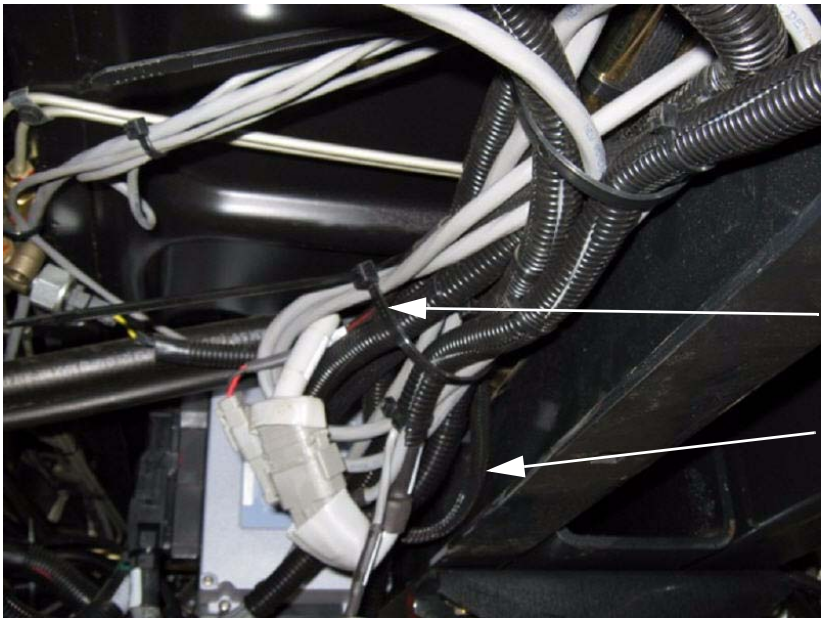
Figure 6-23 Main Harness to SA Module Harness Connections

2. Place grommet around cables entering the cab to protect cables.

Figure 6-24 Grommet on Cab Floor Feedthrough

18 Neatly coil the excess cable and secure with a cable tie.

Figure 6-25 Securing Excess Cable



Roof Module

1. Route the antenna cable connectors through the left hand side cab rear cavity. See *Figure 6-26*.

Note: Use a rope or cable puller to assist is pulling the cable through the wall cavity.

Figure 6-26 Passing Cable Through Cab Wall Access Hole

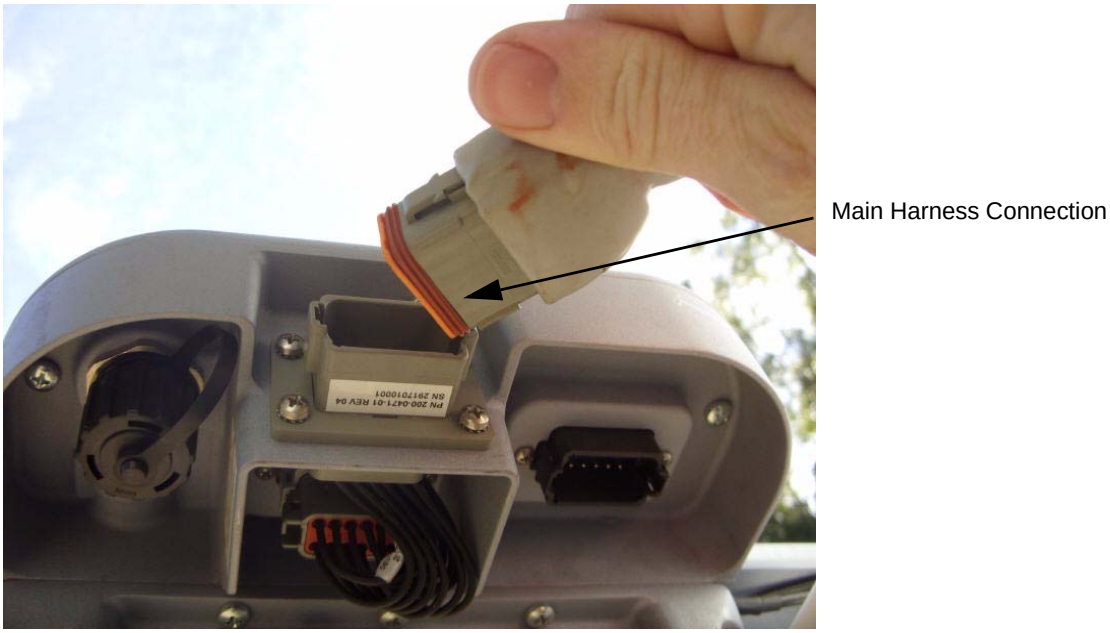
2. Attach the Main Harness cable to Roof Module bracket using cable ties. See *Figure 6-27*.

Figure 6-27 Roof Module Main Harness Routing

3. Connect the Main Harness to the Roof Module connector. See *Figure 6-28*.
4. Orient the 12-pin connector so the word TOP on the cable connector is pointing upwards (towards the sky). See *Figure 6-28*.
5. Insert the cable connector into the Roof Module. Push the connector in until it clicks and locks in place.

Note: To remove the connector, grasp the connector to compress the two side latches and then pull away from the Roof Module.

Figure 6-28 Connecting the Main Harness to Roof Module



6. Orient the Ethernet cable connector with the connector under the receiver so the contacts on the cable connector are pointing towards the back of the vehicle. See *Figure 6-29*.

Note: This orientation is usually towards your right side if you are standing on the vehicle left side and looking towards the Roof Module.

7. Slide the cable connector into the receiver and rotate the plastic bayonet sleeve clockwise to lock the connector. See *Figure 6-29*.

Figure 6-29 Roof Module Ethernet Connection

Display

1. Attach the Main Cable Harness to your Display harness.

Note: Refer to your Display Owners manual for details on connecting the Display harness.

Power Supply Connection

The following sub-sections describe basic instructions for connecting your Display and the AutoSteer system to available vehicle power sources:

- *12V Cab Power Outlet*
- *Battery Power Connection*

Note: Refer to your Display user manual for electrical connection information before attempting to connect the AutoSteer system to vehicle power. If your Display manual requires a cab power connection see the *12V Cab Power Outlet* section, if your Display manual requires a direct battery connection see the *Battery Power Connection* section.

There are two issues that must be addressed when connecting to 12V vehicle power:

- Display Connection
- AutoSteer System Connection

The Display must be connected to 12V vehicle power according to the wiring diagram provided with your Display. The AutoSteer system Main Cable Harness must be connected to a 3-pin 12V power connector. Your Display user manual provides a wiring diagram for connecting the AutoSteer system to 12V Power. Your Display user manual may specify using a cab 12V power outlet or may require a direct connection to the vehicle battery. Your Display wiring diagram specifies the recommended vehicle 12V power source. Whether your Display harness connects to the vehicle battery or to the 12V power outlet inside the cab, it is shipped with the appropriate harness for your installation.

12V Cab Power Outlet

1. This combine does not provide a cab 12V power outlet.

Note: Since there is no 3-pin connector in the cab, you need to provide a cab power outlet. Connect the provided power adapter cable to a vehicle power source capable of providing 12V at 15A maximum. See the power cable adapter as shown in *Figure 6-30* and *Table 6-1* for connection details.

2. Connect the Red (+) and Black (-) power cable adapter wires to 12 volt power on the vehicle protected by a 15 amp fuse.

Note: *Table 6-1* shows the Power Cable Adapter pinout.

Figure 6-30 Power Cable Adapter (201-0156-01)

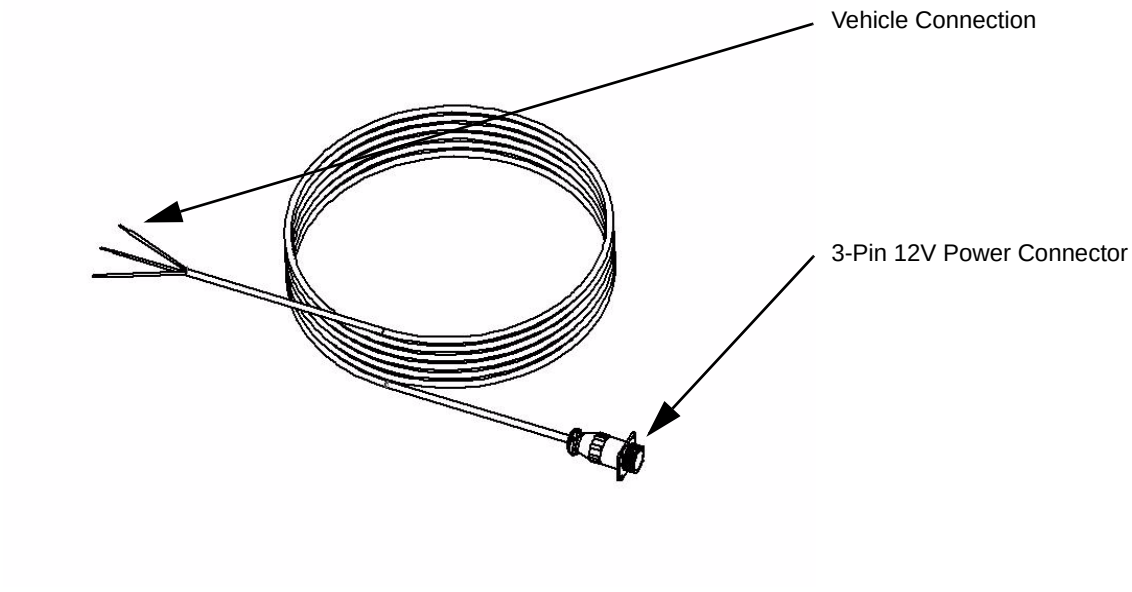


Table 6-1 Power Adapter Cable Pinout

Wire Color	Function
Red	12 V Unswitched Power
White	12V Switched Power
Black	Ground

Battery Power Connection

1. Locate the vehicle battery. See *Figure 6-31*.

Note: The location of the battery is determined by your vehicle model.

2. Connect to the vehicle battery if the Display manual specifies a direct battery connection. See *Figure 6-31*.

Figure 6-31 Vehicle Battery

Note: If the vehicle has an Isolator Switch on the battery negative lead the AutoSteer system ground wire should be connected to the Isolator Switch and not directly to the battery. The AutoSteer system negative lead should be connected so that the Isolator Switch is between the AutoSteer system negative lead and the battery. See *Figure 6-32* and *Figure 6-33*.

Figure 6-32 Isolator Switch

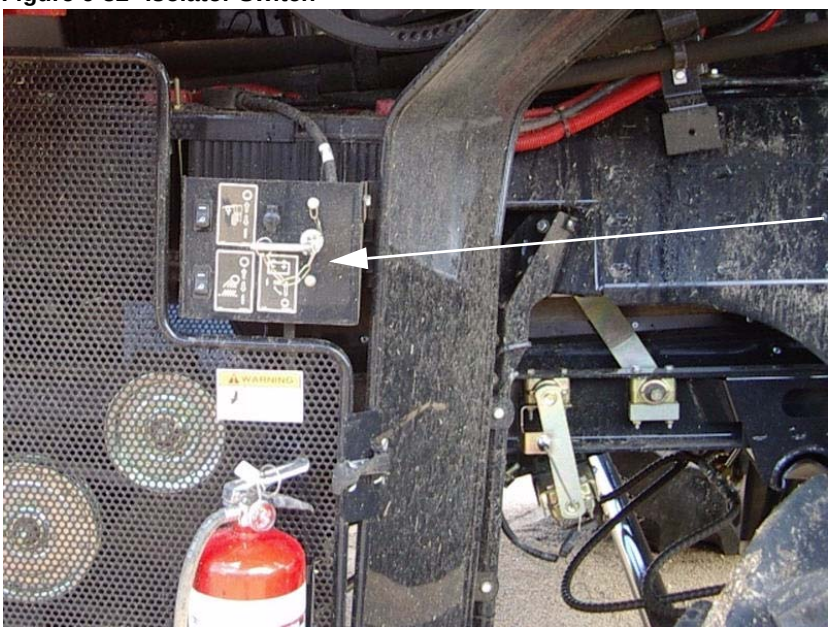
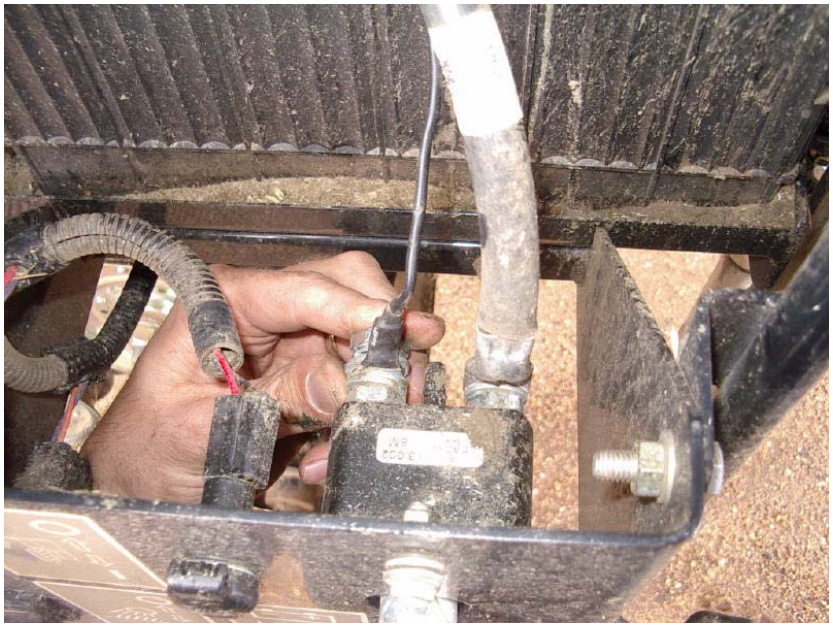


Figure 6-33 Connecting to Isolator Switch



Install Warning Label

Install the Warning label on the cab window in a position that is easy to read and does not obstruct the driver's view of the road or surrounding obstacles. See *Figure 6-34*.

Note: Install the warning label with the language that best matches the operator's language. If necessary, install labels in multiple languages. Warning labels are provided in the following languages: English, French, German and Spanish.

Figure 6-34 Autosteer Warning Label

Post-Installation Procedures and Information

This **Post-Installation Procedures and Information** chapter contains information on procedures and processes that should be completed after the installation process is complete. The information for this chapter is contained in the following sections:

- *Verify the Vehicle is Ready for AutoSteer*
- *Calibration and Tuning Notes*
- *Lowering Roof Module for Vehicle Transportation*

Verify the Vehicle is Ready for AutoSteer

1. Ensure all connectors are properly coupled.
2. Power ON the AutoSteer system.
3. Verify installation and system operation.

Calibration and Tuning Notes

Note: For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

Select the appropriate New Holland combine model when setting up your vehicle on the AutoSteer system Display.

Lowering Roof Module for Vehicle Transportation

The Roof Module mount can be folded down for transport to reduce the chance of collision with a low overhead structure or object.

CAUTION

The Roof Module must be removed when transporting or driving the vehicle at speeds above 30 mph (50 km/h). The Roof Module can possibly detach due to wind loads at higher speeds.

⚠ WARNING

To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.

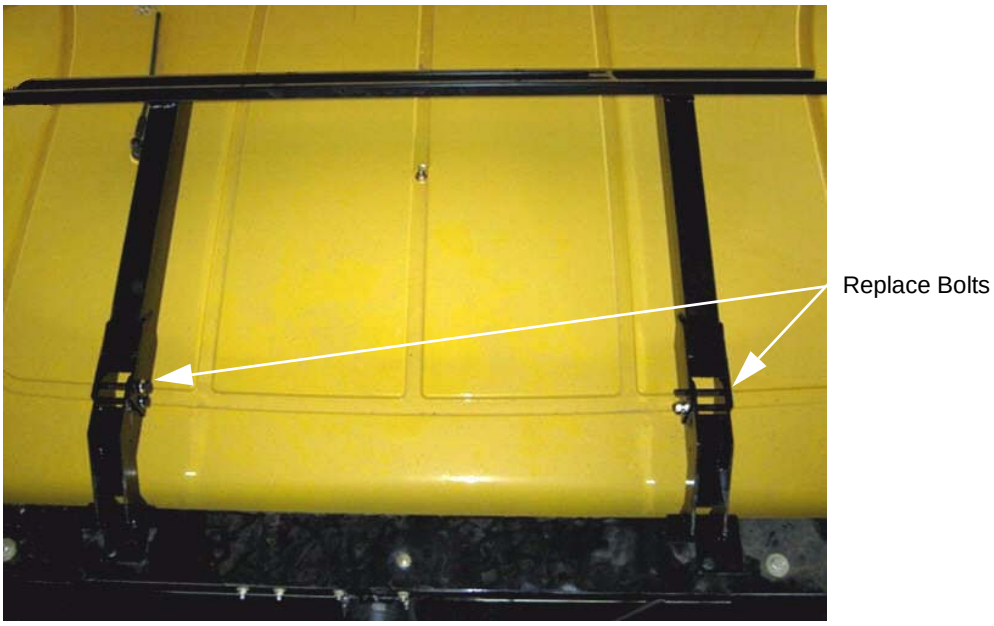
1. Remove the Roof Module from the Roof Rail.
2. Remove the Roof Module Bracket top bolts on both sides. See *Figure 7-1*.

Figure 7-1 Remove Roof Module Bracket Top Bolts

3. Lower the Roof Module Bracket frame. See *Figure 7-2*.
4. Replace the previously removed bolts. See *Figure 7-2*.

Note: The holes line up when the Roof Module Bracket is in the down position.

Figure 7-2 Replace Bracket Bolts



Final Hardware Installation Checklist

This **Final Checklist** chapter contains the verifications steps necessary after the installation of the AutoSteer system.

Note: The Final Hardware Installation Checklist is on the back of this page. You should keep a copy of this checklist and this manual for future reference when servicing the vehicle.

Vehicle Model: _____ Year: _____ Serial #: _____

Customer Name: _____

Location/Address: _____

AutoSteer Installation Kit Part Number: _____

NOTES

_____

_____

_____

_____

_____

_____

Name of Installer: _____ Date: _____

System Installation Checklist

1.	Wheel Angle Sensor Installed and all fasteners are tight.	☐
2.	Monitor Bracket Installed and all fasteners are tight.	☐
3.	Roof Rail is installed and all fasteners are tight.	☐
4.	SA Module is installed and all fasteners are tight.	☐
5.	All cable ends are connected.	☐
6.	All cables are secured with cable ties.	☐
7.	Roof Module locking pin is installed.	☐

AutoSteer Performance Checklist

1.	Complete AutoSteer system calibration.	☐
2.	Complete AutoSteer system tuning.	☐
3.	Check total Wheel Angle Sensor counts.	☐ Value_____
4.	Line acquisition is satisfactory.	☐
5.	On-line steering is satisfactory.	☐
6.	Manual override (kick-out) is working.	☐
7.	Manual steering speed from lock-to-lock is satisfactory.	☐ Value_____Sec.
8.	Autosteering speed from right lock to left lock is satisfactory.	☐ Value_____
9.	Autosteering speed from left lock to right lock is satisfactory.	☐ Value_____

Note: See the *Post-Installation Procedures and Information* chapter for additional information.